

JULY 1919 ~ No 162

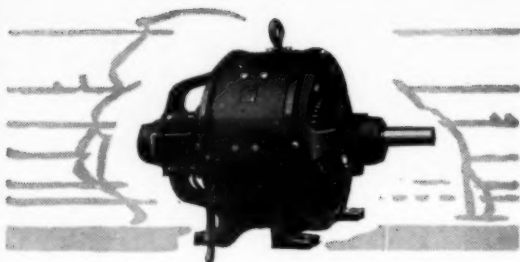
Monthly

A Reference for Buyers

HITCHCOCK'S  
**MACHINE  
TOOL LIST**

Distributed Free to Machine Tool  
Users Everywhere in the United States and to  
Dealers in American Machinery Abroad

Published by  
**A. H. HITCHCOCK**  
1220-1235 Caxton Building  
Chicago



## Designed on a new plan

An unusual combination of engineering knowledge, backed by years of practical experience, was placed at our disposal when designing Type T motors.

Thirty-five electrical engineers in the large steel mills and machine shops who have watched motors operating under the worst conditions showed us where better material or heavier construction were needed. Their ideas were built into Type T motors.

That a motor built on this plan would satisfy the man who wanted better motors has already been demonstrated by actual service.

**Bulletin 2014 gives details**

**Reliance Electric & Engineering Co.**  
1050 Ivanhoe Road, Cleveland, O.

**BRANCHES:** Boston, New York, Philadelphia, Pittsburgh, Chicago

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*Type* **T** *Heavy Duty*  
**RELIANCE MOTORS**  
*Direct Current*

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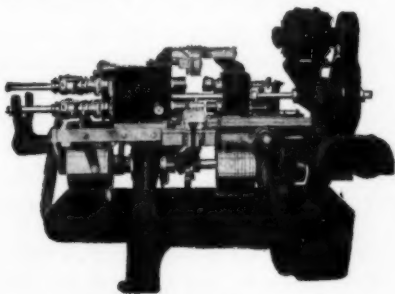
# STILL GROWING

Every year the list of  
*satisfied users of*

## Acme Automatics grows larger

The real reason behind that satisfaction is the actual production that these machines continually turn out.

Why not more of *your* work, *automatically*?



*Capacities up to 3 $\frac{3}{4}$ " diameter*

## THE NATIONAL ACME COMPANY

NEW ENGLAND PLANT  
WINDSOR, VT.

Cleveland, Ohio

CANADIAN SCREW PLANT  
MONTREAL, P. Q.

### *Branch Offices:*

NEW YORK BOSTON CHICAGO DETROIT ATLANTA SAN FRANCISCO  
WAREHOUSES—NEW YORK, CHICAGO With FOREIGN REPRESENTATIVES

*Makers of Gridley Single and Multiple-Spindle Auto-  
matics at Windsor, Vt., and Acme Automatics, Thread-  
ing Dies and Screw Machine Products at Cleveland, Ohio*



# Stock Bushings

**Another step forward in service**

We now carry, made-up, ready for immediate shipment Bunting Plain Bronze Bushings in stock sizes ranging from  $\frac{5}{8}$ " to 2 3-16" inside diameters; and in lengths from 1" to 5". "Bunting Phosphor Bearing Bronze" is used on all stock bushings.

Bushings of special alloy, flanged and special design bushings, also babbitt lined bearings made on order, from patterns and tools supplied by us.

*Ask for "Stock List" and Quotations*

**The Bunting Brass & Bronze Co.**

**754 Spencer Street,**

**Toledo, Ohio**

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# Prompt Deliveries!



On

## Brown & Sharpe Milling Cutters

Avail yourself of this opportunity by sending for catalog 27-S, and selecting from the extensive varieties shown, the cutters needed to fill your present, and possibly your future demands.

*Now is the time to order those special cutters*

**ACT AT ONCE**

**Brown & Sharpe Mfg. Co.**  
Providence, R. I., U. S. A.

**Many  
Styles**



**Many  
Sizes**

# Cincinnati Patent Tu-Speed Planers And Rapid Production Boring Mills

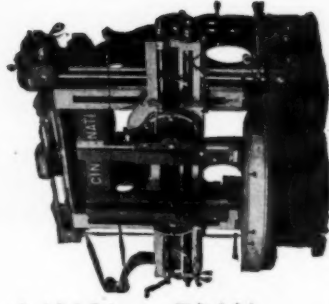
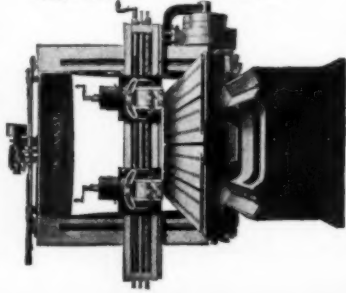
## Tu-Speed Planers

All Cincinnati Belt-Driven Planers from 22" to 48" are of the Patent Tu-Speed type. They provide two cutting speeds—instantly available without stopping the machine—for work of a different character, such as roughing and finishing, which increases production and reduces costs.

## Our Boring Mills

Are unusual tools in their special field of machining work of large diameter. They have great accuracy, speed and strength, and are convenient and easy to operate. They are manufacturing tools of high efficiency.

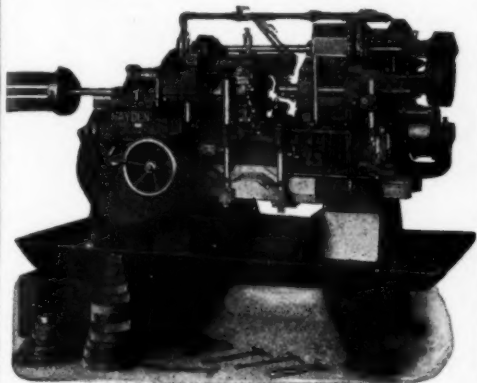
*Write for complete information  
on either Planers or Boring Mills*



THE CINCINNATI PLANER CO., Cincinnati, Ohio, U. S. A.

## A 5-Spindle Screw Machine

Which turns out one piece  
according to its character  
every 2½ to 36 seconds



**¾"x3" Cincinnati Automatic**

If all machining processes could be brought within the range and capacity of the Cincinnati Automatic, we could sell all kinds of machinery for little more than the cost of materials and assembling.

Within its province, however, the Cincinnati Automatic surely does reduce costs to the utmost, because of its unusual output. It has 48 features of distinctive merit, all fully described in the Catalog, which add to its convenience and accuracy and facilitate production.

*You will find the Catalog interesting and instructive,  
and it may point the way to greater economy and profit*

**Cincinnati Automatic Machine Co.**  
Oakley, Cincinnati, Ohio

# All G-K Engine Lathes

From 16" to 30" Swing  
Have G-K Betterments



G-K 14", 16" and 18"  
Heavy Quick Change

Our 16" and 18" Lathes are built with three different styles of headstocks, as follows:

- Four step cone, single back gear.
- Three step cone, friction double back gear.
- Geared head, single pulley drive.

Our 20", 22", 24" and 30" Lathes are built in two styles:

- Three step cone, friction double back gear.
- Geared head, single pulley drive.

## "G-K" Betterments

—comprise the improvements in our lathes suggested by our long experience, which add to their convenience, simplicity, power and general efficiency. We have compiled a book, called "G-K Betterments," which tells all about it.

*May we mail you a copy?*

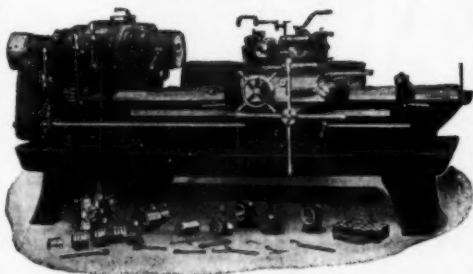
**The Greaves-Klusman Tool Co.**  
Cincinnati, Ohio, U. S. A.

**Cincinnati-Acme**

## **Flat Turret Lathe**

### **The Most Rigid Turret Lathe Made**

**For Both Bar and Chucking Work**



**3¼"x36" Cincinnati-Acme equipped for bar work**

Manufacturers are gradually waking up to the fact that it is highly economical to machine their detail parts in quantities on the Cincinnati-Acme because of its ready adaptability, convenience in handling and big output. It combines all the advantages essential for both bar and chucking work, is equally efficient on either, and is readily changed to meet conditions.

*May we show what it will do on your  
work without cost or obligation?*

**The Acme Machine Tool Co.**  
**Cincinnati, Ohio, U. S. A.**



## Wash Metal Parts At Half the Time and Cost

**T**HE NIVIN Metal Parts Washing Machine takes the place of open tanks and hand labor. Here is a washer that makes every part *chemically clean*. It will not damage the finest and most delicate metal edges. It never gets careless—never tires.

NIVIN uses but half the number of men and does the work in half the time required for washing by hand. The NIVIN is made in flexible units and fits right into your own system. No wet floors.

The NIVIN uses no gasoline. Powerful revolving streams of hot cleaning solution shot from above and below at every angle, cut and strip away the oils and greases. Where cleaning compound is used much less will do the work. The NIVIN has no chains, gears, belts, or complicated parts. The first NIVINS, in constant use two years, have never required adjustment.

**NIVIN**  
METAL PARTS WASHING MACHINE

**Write for Pamphlet**

Let us mail you our pamphlet, "Speeding Factory Production With the NIVIN." It will show you how the NIVIN will wash metal parts better than by hand and will speedily pay for itself in saving time and labor costs.

**Nivin Manufacturing Co., Inc.**

843 Larrabee Street

Chicago, Illinois



is now proving its value in **reducing sand blasting costs** in times of peace, quite as effectively as it demonstrated its wonder-working power in **speeding-up output** during the industrial turmoil of war.

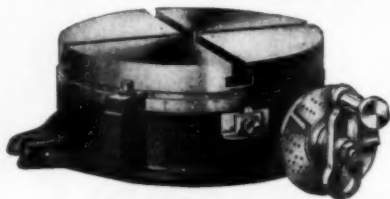
*Send for envelope sample*

**United States Silica Company**

1941 Peoples Gas Bldg.,

Chicago, Ill.

# Cochrane-Bly Co. Circular Tables



12" Plain Table with Dividing Attachment



12" Plain Table and 10" Compound Table with Hand Feed

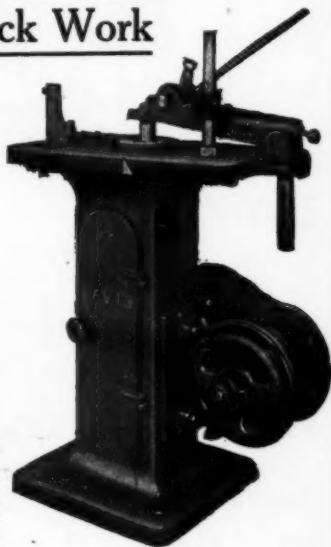
For use on Milling Machine, Slotter, Planer, Shaper, Drill Press and Boring Mill in the manufacture of Dies, Punches, Jigs, Fixtures, Gauges, Templates, Cams, Formed Cutters, and Miscellaneous Machine Work.

*Circular and Prices on Request*

**Cochrane-Bly Company**  
Rochester, N. Y., U. S. A.



## Modern Methods for Quick Work

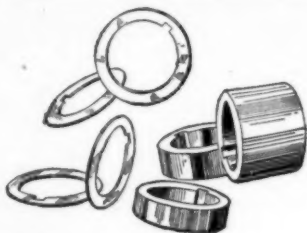


### **A DAVIS KEYSEATER**

Motor driven,  
will save you  
valuable space  
as well as in-  
crease your pro-  
duction. It is  
an investment  
you can't afford  
to overlook.

*Write for Circular*

**DAVIS MACHINE TOOL CO., Inc.**  
**ROCHESTER, N. Y., U. S. A.**



## Don't

let your men cut paper or tin washers for your milling machines. You can get steel washers .003, .004, .005, and .006 thick at \$3.00 per C giving you a variation by the thousandth. We also make collars from  $\frac{1}{8}$ " to 3" long for the various arbors.

**The Unity Manufacturing Co.**  
4229 Lorain Ave., Cleveland, O.

## Keyseating

The  
Simple Way

**The National  
Keyseating Miller**

*For Full Particulars  
Write for Catalog O*

**National Machine Tool Co.**

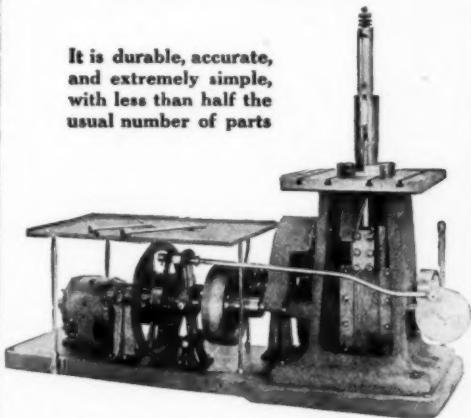
2266 Spring Grove Ave.,

Cincinnati, O.



# Faster Keyseating With the "Catlin"

It is durable, accurate,  
and extremely simple,  
with less than half the  
usual number of parts



With less than half the number of parts in other machines of its class, everything about the "Catlin" is extremely simple and substantial, without being clumsy. There is no chance for lost motion in feeding out the cutting tool, as all gear and worm wheels are eliminated.

The piece is instantly and exactly centered by the bore, and the keyseat is cut with the proper taper to the closest accuracy, whether hubs are finished or not.

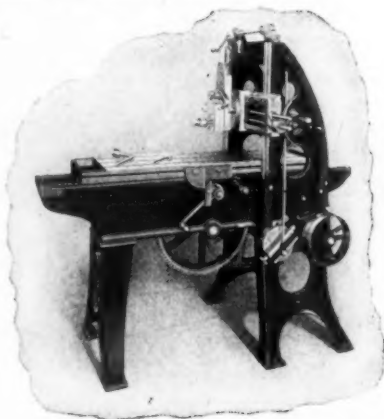
Used by Government shops, automobile factories, navy yards, and all classes of machine shops, it is making remarkable records everywhere.

*Write for large folder, which explains fully and gives some interesting production records in ordinary shop use*

**Chattanooga Machinery Company**  
**Chattanooga, Tenn.**

# The Lee Planer

**A Stiff, Powerfully-Geared Small Machine  
for the Quick, Accurate and Economical  
Planing of Small Work**



**16x16x42" and 16x16x54"**

It is of big planer construction in everything but size, and because of greater ease of handling it is more efficient and economical for planing small work. It saves in space, overhead, time and labor.

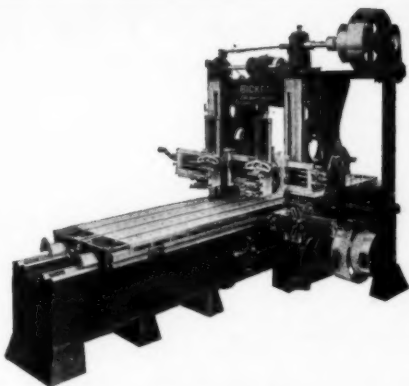
Formerly known and highly regarded as the Walter Bros. Patent Planer, we are now building into it the well-known Lee quality, which is an additional guaranty of satisfaction.

*Glad to explain its merits more fully upon request*

**The Frank H. Lee Co.**

**MACHINERY DIVISION**

**Danbury, Conn., U. S. A.**



## 36"x36"x12' Bickett Metal Planer

**T**HIS PLANER is built in the following table lengths: 8, 10, 12, 14 and 16 feet. The Planer is equipped with one Head on the cross rail, equalized Table Lubrication, Aluminum Driving Pulley and necessary Wrenches. Second Head on rail and Right and Left-hand Side Heads quoted on request.

The arrangement for the belted motor drive as illustrated is so arranged that motor can be attached either by flexible coupling or by set of gearing. Flexible coupling and gearing are furnished at an extra cost.

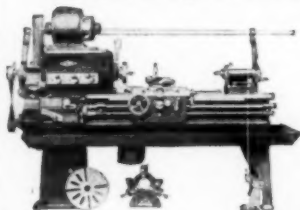
You will note in our countershaft mounted on top of the housing of our planer, in addition to its very rigid construction with a separate pedestal extending to the floor, it has means for adjustment to tighten the belts as they stretch under strain, also means for adjusting countershaft in proper mesh with the motor gear. This feature we believe to be novel and substantially important. The shaft bearings are of ring oiling design.

The style motor and speed of same is left optional to the purchaser of the planer, as we furnish no electrical equipment, except when ordered, for which we can quote upon request.

**The Bickett Machine & Mfg. Co.**  
Cincinnati, Ohio, U. S. A.

## **"Filsmith" with NEW Features**

**Measures Up To Modern Needs**



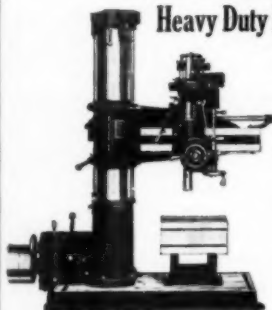
**14" Swing  
Q. C. Gear Box  
And 12-Speed  
Ball Bearing  
Geared Head**

With great power for its rated swing, this high grade tool lacks nothing in efficiency, accuracy and lasting wearing qualities. Full description and the interesting price are ready for you.

**PHILIP SMITH MFG. CO., SIDNEY, O.**

**It will be worth your while to carefully consider  
these distinctive features of the**

### **Heavy Duty Mueller Radial Drill**



**Patented Stationary Column.**

**Combination Positive and Friction Feed.**

**Effective, yet extremely simple control.**

**Combination Low and High speed reverse for backing out taps.**

**And many others which this space will not permit us to enumerate.**

**The Mueller Machine Tool Co.**

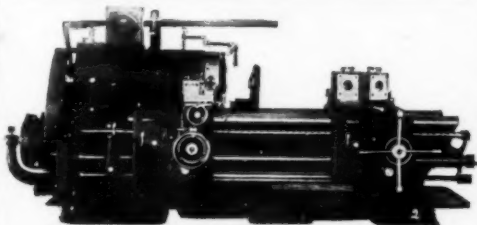
**Radial Drills and Lathes**

**Cincinnati, Ohio**

# STEINLE TURRET MACHINE CO.

## MADISON, WISCONSIN

Originators of the Heavy Duty Full Swing Side Carriage Turret Lathe



**Steinle 24" Full Swing Side Carriage Turret Lathe**

Machine is regularly furnished belt driven or arranged for motor drive.

Actual swing over ways.....	24"
Swing over side carriage.....	21"
Diameter of hole through spindle.....	4" or 6 1/4"
Traverse of side carriage and of turret carriage .....	56"

Both carriages have independent quick change feed and independent power traverse all controlled from carriage aprons.

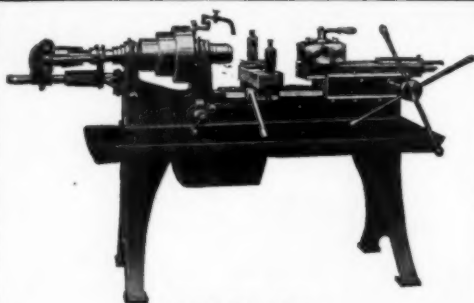
Side carriage can be run past the chuck and is equipped with cross slide having power cross feed and with turret tool block having four tool holders.

There are thirty reversible spindle speeds available. One belt or one motor furnishes power for all functions of the machine.

Turret is massive and designed particularly with a view to rigid support of tool equipment.

Send us drawings of gas engine fly wheels, cylinders where cast singly, pistons, and piston rings. Let us give you production estimates and the cost of tool equipment for these and other pieces and also let us tell you the time required to change the tool settings for the different pieces.

Numerous repeat orders received from many of the principal manufacturers of tractors, trucks, aviation motors, marine gas engines, and stationary engines demonstrate the satisfactory results obtained from the use of our machines.



**MODEL "D"**

## **Turret Lathes and Screw Machines**

**Now Ready for Delivery**

**Designed for Rapid Manufacturing of  
Parts Requiring Several Operations**

**MADE IN FOUR SIZES:**

- No. 2 {  $1\frac{1}{8}$ " Wire Feed Capacity, Plain Head  
          {  $1\frac{1}{32}$ " Hole Through Spindle.
- No. 3 {  $1\frac{5}{8}$ " Wire Feed Capacity, Plain Head  
          {  $1\frac{1}{32}$ " Hole Through Spindle.
- No. 4 {  $1\frac{5}{8}$ " Wire Feed Capacity, Geared Head  
          {  $2\frac{1}{32}$ " Hole Through Spindle.
- No. 5 {  $1\frac{7}{8}$ " Wire Feed Capacity, Geared Head  
          {  $2\frac{3}{32}$ " Hole Through Spindle.

**With or Without Power Feed to Turret Slide.  
Mechanically Perfect and Fully Guaranteed.**

**Manufactured By**

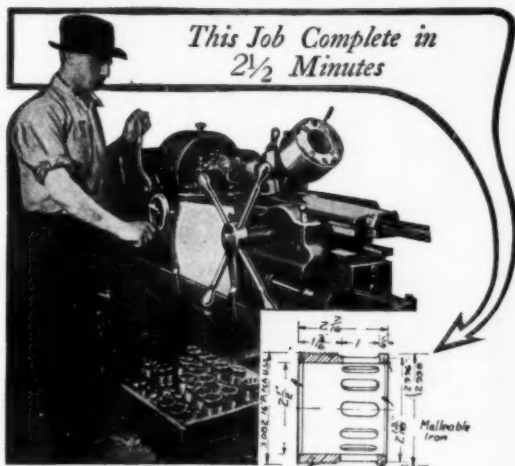
**Smurr & Kamen Company**

**328-330 N. Albany Ave., Chicago, Ill.**



# THE TILTED TURRET

A CLEAR TRACK — THE STOCK



## The TILTED TURRET MACHINES

are **accurate** and **productive**.  
Fifteen years' of thoroughly  
tested service. A size for  
every class of manufacturing.

Ask the User

Catalog "H"—Its Free

WOOD TURRET MACHINE CO.

BRAZIL, INDIANA, U.S.A.

# Monarch Lathes

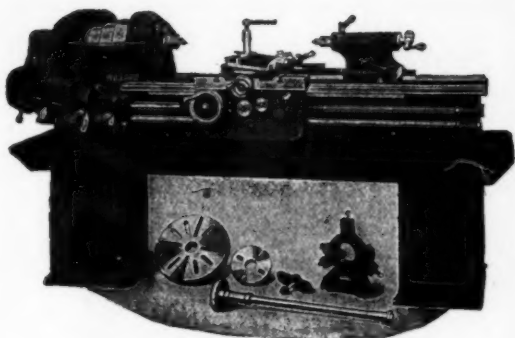
give universal satisfaction to the user. They have been doing this for years, and this accounts for the ever increasing demand for **Monarch Lathes.** Built in all styles and with any attachments desired.

**Sizes 10 to 30-inch Swing**

*Sold by a leading Machinery Dealer  
in every machinery center.*



## The Monarch Machine Tool Co., Sidney, Ohio



# The Willard

## (Mattman-Bratten) Double Back Geared Quick Change Tool Room Lathe

The new style headstock, with castings brought to center line in both front and rear, insures extreme stiffness. The cone pulley is machined all over, both inside and out. The spindle is chrome nickel steel forged and bored from the solid, ground to accurate standard sizes and guaranteed interchangeable, with phosphor bronze bearings.

The compound rest has a top slide composed of a steel casting, and no breakage is possible. The bottom slide is graduated for any angle up to 90 degrees.

The quick change gear box is a unit mechanism bolted to the bed. All gears and clutches are steel, made from the bar or forgings—all so strong that feed changes may be made while running under cut.

These are only condensed descriptions of a few Willard features. Our literature describes these and many others more fully.

Also made in the all-gear-head type.

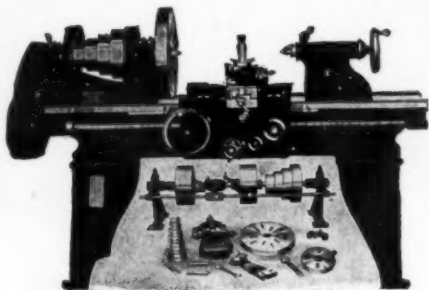
*Write for the complete description of the Willard Line  
of both Tool Room and Engine Lathes*

## The Willard Machine Tool Co., Inc.

F Street, Box 784

CINCINNATI, O., U. S. A.

# South Bend Lathes



## For the Machine and Repair Shops

South Bend Lathes are made in six sizes—13", 15", 16", 18", 21 and 24" swing, with beds from 4' to 16' in length. Furnished with either straight or gap bed.

*South Bend Lathes have been on the market thirteen years. Over 20,000 in use. Dealers in every large city.*

13" Lathe.....	\$ 256	18" Lathe.....	\$ 600
15" Lathe.....	336	21" Lathe.....	771
16" Lathe.....	432	24" Lathe.....	1085

Price includes equipment as shown in illustration

*Send for free Catalog illustrating and describing entire line*

## South Bend Lathe Works

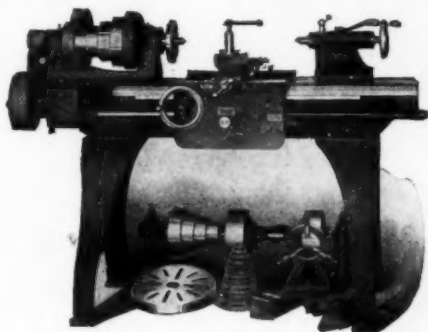
Established 1906

South Bend, Ind.

430 E. Madison

# Worcester 12" and 14" Lathes

Of Great Accuracy and Reliability



**Worcester 14", 4-Step Cone, Single Back Geared**

Worcester Lathes are just good lathes—unusually so. They are particularly good in alignment, and they have the generous bearings and wearing surfaces to maintain their great accuracy.

They also excel in facility of operation and general handiness. Changes of speed and feed, settings for the cutting of screw threads, and the interchange of compound rest and plain tool block are all so easy and quick.

Also made with Geared Head for Motor or Single Pulley Drive, and in the Tool Room type with oil pan and all desirable accessories.

*They are right up to date. Write for late folders.*

**Worcester Lathe Company**

**68 Prescott St.,**

**Worcester, Mass.**

# Crawford Lathes



Also Made  
with  
Geared Head

Standard Type D  
**15" Tool Room Lathe**

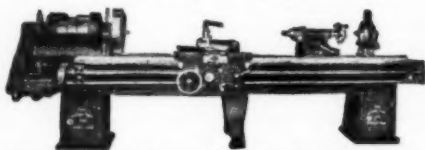
Belt or  
Motor  
Drive

Made for a discriminating trade and to give satisfaction under the most exacting conditions.

**Crawford Machine Tool Co., Inc.**  
21 Park Row, New York

## Manufacturers' Favorite Lathe

The Sidney Meets All Requirements



S. or D. B. G. ; Plain or Q. C. G. ; Beds from 6' Up

Lathes must make good or they do not become "favorites." Sidneys measure up to the quantity demands of the shop and the precision requirements of the tool room. Their rigidity and solid build enables them to stand up to the heaviest grind. Furnished with or without accessories. Full specifications on request.

**THE SIDNEY TOOL CO., SIDNEY, OHIO**

**"THE SMALL LATHE FOR THE BIG JOB"**

# "DALTON SIX"

**METAL WORKING  
LATHE**  
*Actual Swing 7 1/2 inches*  
**MODEL TYPE "B-4"**  
30 OR 36 INCH LENGTH OF BED



Standard Machine with High Leg and Type High Leg



Standard Machine with High Leg and Type High Leg



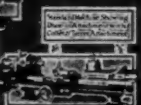
Super Attachment for lathe



Standard Bench Type



Standard Bench Machine with Motor Drive



Standard Machine with Motor Drive



Standard Machine with Motor Drive



Standard Machine with Motor Drive



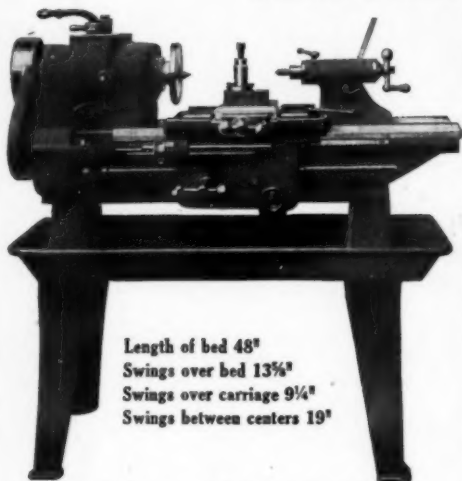
Standard Machine with Motor Drive

MANUFACTURED BY  
**DALTON MANUFACTURING CORPORATION**  
NEW YORK, U.S.A. CABLE ADDRESS "ALEDAL" NEW YORK

**COMPLETE BULLETINS SENT ON REQUEST**

# A Short Lathe

For the Rapid Production of  
**Short Parts**



Length of bed 48"  
Swings over bed 13½"  
Swings over carriage 9¼"  
Swings between centers 19"

## **The Adams Short-Cut Lathe**

Better and cheaper in every way for the quantity production of short duplicate parts of comparatively small diameters. It is simply designed and solidly built for maximum power and speed, with great flexibility and ease of operation. Within its range it is a most satisfactory producer of the highest economy.

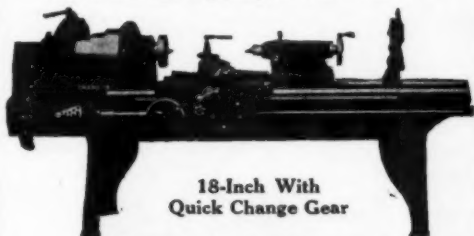
*Glad to furnish complete information*

**O. R. Adams Manufacturing Co., Inc.**  
**Rochester, N. Y.**



# Practical Experience

Gives its Super-Quality to the "Chard"



18-Inch With  
Quick Change Gear

Made in Sizes 16", 18", 20", 24" and 28"

No one has had a better opportunity to study the needs of lathe users, and how best to supply them, than has the designer and builder of the "Chard," which has built into it the results of his practical experience of over 35 years in the manufacture of high-grade lathes.

The super-quality of the "Chard," therefore, is as highly practical as the experience of its builder has been. This is shown in its exact and careful construction, its sturdiness, its convenience, and in its ability to handle heavy work with ease, speed and accuracy.

*To know the "Chard" is to want it  
May we help you know it without obligating you?*

## Chard Lathe Company

Newcastle, Ind.

### DOMESTIC DISTRIBUTORS

THE F. O. STALLMAN SUPPLY CO., San Francisco, Cal.  
VONNEGUT MACHINERY CO., Indianapolis, Ind.  
ENGLISH & MILLER MACHINERY CO., Detroit, Mich.  
OGDEN R. ADAMS, Rochester, N. Y.  
THE W. M. PATTISON SUPPLY CO., Cleveland, Ohio.  
J. S. MILLER MACHINERY CO., Pittsburgh, Pa.  
MONARCH MACHINERY CO., Philadelphia, Pa.  
DALE-BREWSTER CO., Chicago and New York.

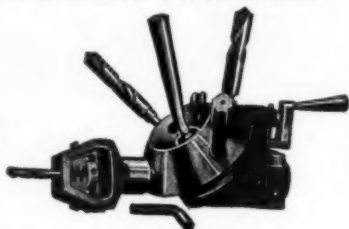
## **Newman Five-Hole Tailstock Turret** **Makes any Standard Lathe a Turret**

Invaluable in emergencies when the turret lathes are busy. To those who have no turret lathes it is indispensable.

Will fit  
any lathe

Attach in  
15 seconds

Sent on  
trial

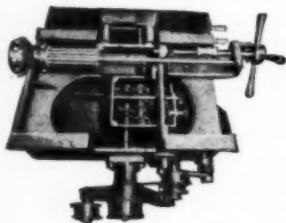


*Write for "3 Ways to Speed up the Work"*

**NEWMAN MANUFACTURING CO., Cincinnati, O.**

## **Our NEW Gear Feed**

**Eliminates Friction Feed Troubles**



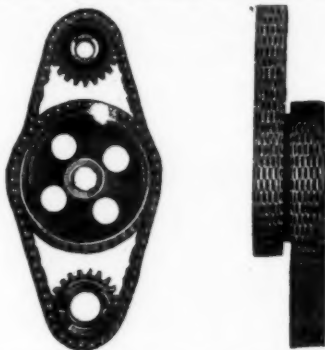
It brings your Jones & Lamson friction feed turret lathes up to date at small cost. The increased production will soon pay for it.

### **Repeat Orders**

tell their own story—our satisfied customers are our best advertisement; glad to add you to the list.

*Do not miss this worth-while economy*

**A. V. Wiggins & Co., Dept. H**  
**384 W. Fayette St., Syracuse, N. Y.**



## **War Record Not Made Public**

### **The "Whitney" Special Quality "Type M" Chains**

**made a great showing during the war years 1916, '17 & '18**

Our tests and demonstrations were made on prominent 8-cylinder motors in service on a large number of cars owned in the State of Connecticut.

During this long period not a single "Whitney" Chain or Sprocket had to be replaced and the condition of every Drive has been pronounced remarkable.

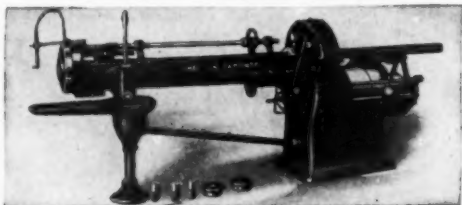
One Drive recently examined had given over 35,000 miles' service and both Chains and sprockets were in such perfect condition that they appeared good for more than double that record (Sprockets having no adjustment).

The links of this SPECIAL CHAIN have finished faces and reamed holes, and the smooth faces do not damage the Sprocket teeth.

Our war contracts were such that we did not announce this SPECIAL CHAIN until after the conflict was over.

**The Whitney Manufacturing Co.**  
**Hartford, Conn.**

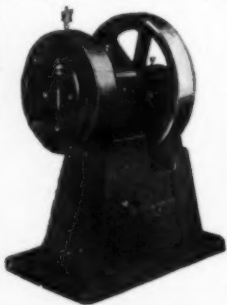
**This is only one of the  
11 TYPES — 5 SIZES  
Ask for a complete catalog**



**J.N. LAPOINTE CO.**  
NEW LONDON, CONN.

**Makers of Broaching Machines and Broaches.**

**3,000 blows a minute offer great possibilities  
in quick reduction of stock**



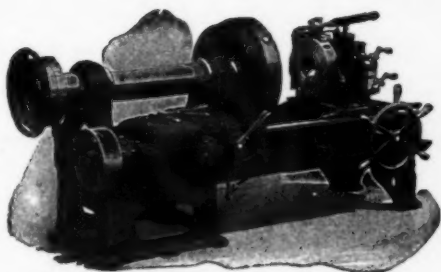
## **The Etna Rotary Swager**

Is highly valuable not only for its quickness in pointing, tapering and reduction of stock, but also for its accuracy to within a few thousandths of an inch—no flat spots. Often multiplies production over power hammers 5 to 10 times.

Made in regular sizes to swage  $\frac{1}{4}$ " to  $4\frac{1}{2}$ " diameter. Any reasonable change in size made to suit.

Write for Catalog. It shows a number of production figures.

**The Etna Manufacturing Co., TOLEDO,  
OHIO**



(No. 4 Peerless. Belt Drive. All Gears are Covered)

## Why Should You Buy B. & Ks.?

With labor and material 'way up, manufacturers have to economize as never before—and the best machines are always an economy—that's why.

### Pipe Threading and Cutting

is done at rock-bottom costs on our modern machines. While they are the last word in convenience and ready adaptability, all parts are so simplified that ordinary labor quickly becomes expert, and you are assured of maximum production.

We have been building these machines for over a third of a century, and our line offers you a choice of 17 styles and sizes, for pipe from  $\frac{1}{4}$  to 18 inches in diameter.

*Ask us to tell you of the "points of superiority"  
Your needs will have the attention of experts*

**Bignall & Keeler Machine Works**  
Edwardsville, Illinois

## George A. Lewthwaite Dependable Punches and Dies



### *For All Makes of Machines*

George A. Lewthwaite Punches and Dies are made for service and guaranteed to give it.

We invite you to send us a trial order, and to use that punch or die on the most difficult job in your shop. We want to add you to our list of thoroughly satisfied customers.

## Sheet Iron Shear and Rod Cutter

This handy tool is compact, convenient and easy to operate. You will find it just right for many jobs in your shop, for it has power to do easily shearing and cutting even beyond its rated capacity. It will earn its cost in a comparatively short time.

handy tool is compact, convenient and easy to operate. You will find it just right for many jobs in your shop, for it has power to do easily shearing and cutting even beyond its rated capacity. It will earn its cost in a comparatively short time.

**Also**  
Pipe Benders  
Bar Benders  
Power Presses  
Foot Presses  
Etc., Etc.



*Get our Catalog of Iron-Workers' Tools for handy reference*

**George A. Lewthwaite Co.**  
116 Walker St.,      -      -      New York

## Our Pipe Benders Meet The Demand



Ever since their invention our hand Pipe Benders have had a steady sale and have given universal satisfaction.

Recently, we have made some improved attachments that permit of a wider range of work and open up a new field in the kind of bending the machine will accomplish.

If you do pipe bending you will find our machine an economical, simple and very efficient appliance in reducing costs and doing better work. For 2" and under.

*We have a Bulletin waiting for you. Send for it now.*

**Pedrick Tool & Machine Co.**

**3644 N. Lawrence St., Philadelphia, Pa.**

Manufacturers of Cylinder Boring Bars, Portable Millers, Crank Pin Turning Machines, etc.



## Beaudry Hammers

**For General Forging**

Saves Fuel, Time and Labor.  
Cuts Forging Costs in Two.

*Belt or Motor Driven*

**Beaudry & Co., Inc.**

141 Milk St., Boston, Mass.

SALES AGENTS—The Machine Tool Engineering Co., Inc., New York City; Brown & Zortman Machinery Co., Pittsburgh, Pa.; W. M. Pattison Supply Co., Cleveland, O.; Eccles & Smith Co., San Francisco and Los Angeles, California; Hallidie Mchy. Co., Inc., Seattle, Wash.; The Portland Mchy. Co., Portland, Ore.; Alfred Herbert, Ltd., Coventry, Eng., London, Paris, Calcutta, Yokohama; Sherritt & Storer Co., Philadelphia, Pa.; The English Tool & Supply Co., Kansas City, Mo.; The E. L. Essley Mchy. Co., Chicago, Ill. and Milwaukee, Wis.



**It's Portable**

## The Barr Pneumatic Hammer

**Is recognized today by progressive shop men as the ideal light power hammer!**

A tool which should be in every up-to-date shop and tool room. A tool which repays its cost in short order and which you will truly appreciate every day you own it.

Expertly designed—exceptionally well built—simple—economical and dependable. Installed just where you want it, without expense of foundation, belts, shafting or motors.

Readily moved right to the job inside or outside.

**Write for Bulletin 10H.**

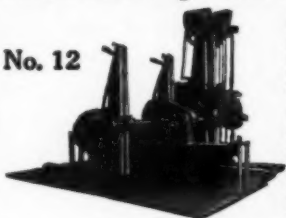






## P. & H. Drilling and Boring Machine

**No. 12**



1. Rapid traverse in each direction can readily be manipulated by slight adjustments on the hand wheel.

2. The spindle speeds are obtained by quick change gears and variable speed motor for either A. C. or D. C. current resulting in the following speed variations:

**A. C. Current, 12 to 542 R. P. M.**

**D. C. Current, 10 to 445 R. P. M.**

3. The four changes of feed available for each speed are made by the operator without leaving his position near front end of spindle.

**Pawling & Harnischfeger Company**

**Milwaukee, Wisconsin**

## THE LAMBERT Horizontal Boring Machine

**Extremely  
simple**

**For  
Boring  
Milling  
Drilling  
Tapping**

**Wonderfully  
accurate**



Start, stop or reverse  
any feed with this lever

Start, stop or reverse  
the bar with this lever.

**The Lambert Machine & Engineering Company**

**Cleveland, Ohio, U. S. A.**

**For Speedier Light Drilling  
and Tapping**

## **Hammond High-Speed Sensitive Radial Drills**

*Write and find out how you can cut your  
light drilling and tapping costs 25% to 33%*



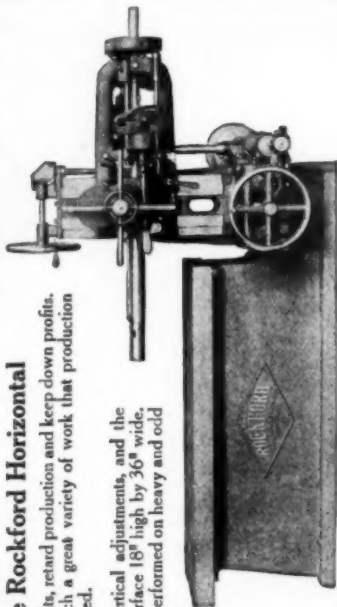
**The Hammond Mfg. Co.**  
**Cleveland, Ohio**

# A Modern Machine to Meet Modern Conditions

## The Wide Range Rockford Horizontal

Misfit machines, like all misfits, retard production and keep down profits. The "Rockford" fits right into such a great variety of work that production is stimulated and shop costs lowered.

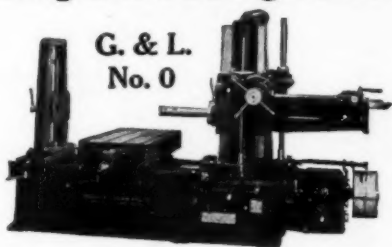
The head has lateral and vertical adjustments, and the spindle operates anywhere on a surface 18" high by 36" wide. A number of operations may be performed on heavy and odd shaped work at one setting, with great accuracy and economy of time. Capacity for high speed drills up to 2" and boring up to 6". Larger tools may be used by avoiding the coarse feeds.



*An unusual machine  
Write for complete data*

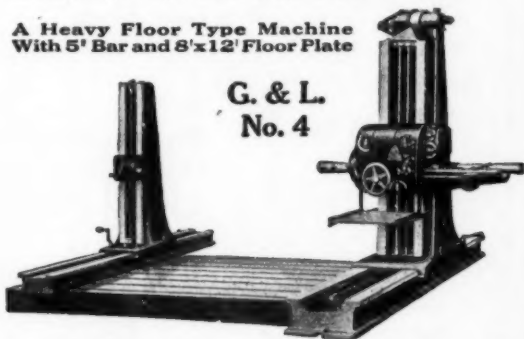
**THE ROCKFORD DRILLING MACHINE CO., Rockford, Illinois**

# G. & L. Horizontal Boring Drilling and Milling Machines



You will like the specifications of this rigid, self-contained tool, with direct drive, centralized control, superior accuracy and capacity, and great ease of operation.

**A Heavy Floor Type Machine  
With 5' Bar and 8'x12' Floor Plate**



This giant tool makes easy work of such pieces whose shape and size make their handling impossible on an ordinary machine. With necessary fixtures, if work permits, it will machine five sides of a casting at one setting. The solid build eliminates vibration.

*Let us send Circulars of these interesting economy tools*

**Giddings & Lewis Mfg. Co., Fond du Lac, Wis.**



## High Grade Ball Bearing Drilling Machines

With 1, 2, 3 and 4 Spindles

*Write for descriptive circular*

**Francis Reed Co.**

43 Hammond St.

Worcester, Mass.

## Demco High Speed Ball Bearing Drill

It drills rapidly.

Normal ball bearings thruout make it practically frictionless.

The belt adjuster and *automatic belt stretch compensator* is found in Demcos only. It takes the shock off all bearings and practically eliminates vibration.

Write for description of these and other superior features.

*Also made in floor type, with one to four spindles*



**The Demco Machine Tool Co.**

*Successors to The DeMooy Machine Co.*

706 Frankfort St., N. W.

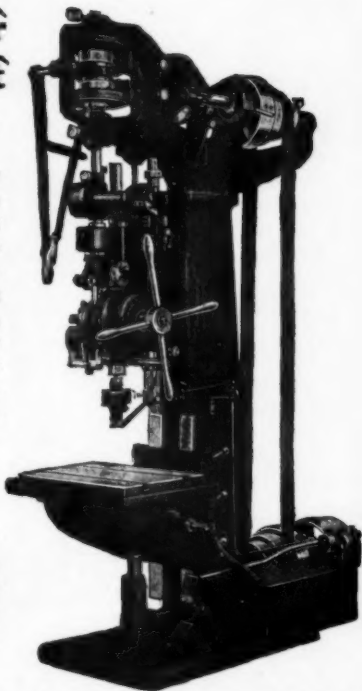
Cleveland, Ohio

# Turner Turret Economy

is immediately apparent when you consider that *a series of operations are completed* without shifting position of the work or changing the tools. The rotation of the Turret is

## Automatic

When operator returns spindle to its full height, it automatically indexes to the next spindle.



There is an extremely wide range of speeds by means of minor gear changes; speeds may be different for each spindle, and all may be easily changed, to meet special conditions of stock or tools. If you want to reduce costs, increase output and improve quality, use a Turner Turret. Send for Bulletin FH and mail us a sketch of your work.

*Builders of QUINT TURRET. Ask for Bulletin QH*

# TURNER TURRET

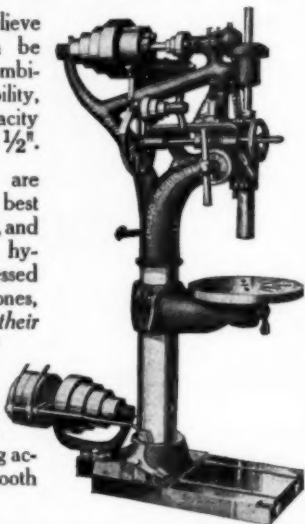
**Turner Machine Company**  
DANBURY, CONN. and Newark, N. J.  
Incorporated with Turner, Atherton & Co., Ltd.,  
Denton, Manchester and Stockport, Eng.

## New and Improved 20-Inch Canedy-Otto Power Drills

We do not believe their equal can be found in the combination of durability, price and capacity for drilling up to  $1\frac{1}{2}$ ".

The bearings are large, with the best of babbitt metal, and with Randall hydraulically pressed sheet graphite cones, *which increases their life 300 to 400 per cent.*

The gears are cut on automatic machines, insuring accuracy and smooth running.



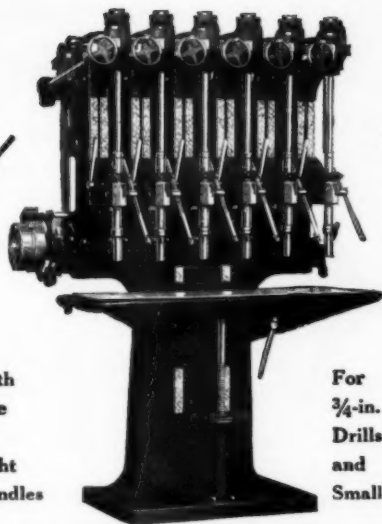
Canedy-Otto Drills are high grade throughout, with all the graduated and automatic features of high-priced machines. Equipped, if desired, with a powerful direct-connected motor, all-spur-gear drive, also a new improved tapping attachment.

*We are offering big quality for a moderate price  
It is no trouble to mail you the full description*

**Canedy-Otto Mfg. Company**  
**Chicago Heights, Ill.**

Manufacturers of Forges, Blowers, Drills, Lathes and Grinders





With  
One  
to  
Eight  
Spindles

For  
 $\frac{3}{4}$ -in.  
Drills  
and  
Smaller

## H. & W. Drilling Machines

### Reduce Costs in Competitive Tests

That is why so many large concerns have finally adopted them as their standard—between two and three thousand H. & W. drilling spindles in one plant alone. Their gearless power transmission with frictionless bearings is one reason; there are others.

*Write for Catalog, with free Speed and Feed Chart*

**The Henry & Wright Mfg. Co.**  
760 Windsor St., Hartford, Conn.

OVER-SEAS REPRESENTATIVE

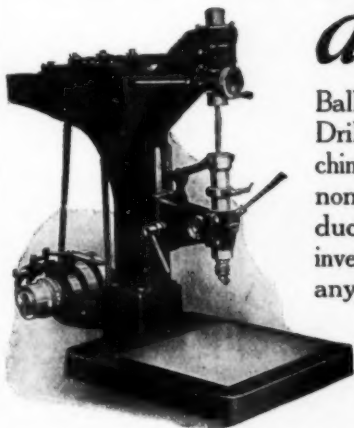


*Principal Foreign Offices: Paris, Turin, Zurich, Barcelona*



# Economical Drilling

Wide range, convenient controls, low power consumption, capacity for high speeds and rigid quality construction make the



*Avey*

Ball Bearing Drilling Machine an economical producer; a good investment in any shop.

*Details are well worth investigating.*

**Write today**

**The Cincinnati Pulley Machinery Co.**  
Cincinnati, Ohio

“Van Dorn”  
ELECTRIC TOOLS

Will Help You  
to “Serve and  
Conserve”



For years “Van Dorn”  
Portable Electric Drills  
and Grinders have been  
serving and conserving  
for alert manufacturers.

In these days of labor  
shortages, high costs and  
unparalleled demand  
“Van Dorn” Tools play  
a greater role than ever  
in saving time, money  
and labor and “speed-  
ing up the work.”

“Van Dorn” Tools can  
help you to do your bit  
better and quicker.

*Write for Catalogs*

The *Van Dorn* Electric Tool Co.  
Cleveland, O.

*Sales Offices in all leading cities*



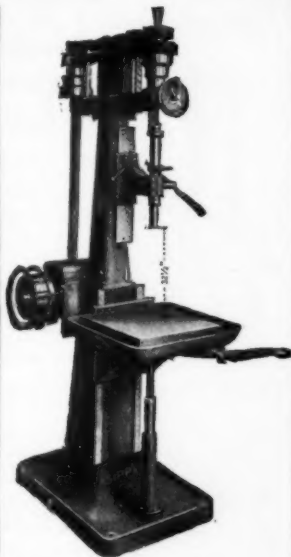
## FEATURES

**Quick  
Change Speed**  
Change in 2 seconds

**Most  
Efficient Drive**  
No belt troubles

**Safety First**  
All parts protected

**Heaviest  
Drill Made**  
Yet very sensitive  
**All Ball Bearings**



## We've Sold Thousands of The Sipp Quick-Change-Speed Drills

because practical men have been quick to see the merits of the unique drive and speed-changing device; the effective method of oiling and the many unusual features which combine to give it **HIGHEST EFFICIENCY.**

*Write for Bulletin No. 4*

**The Sipp Machine Co.**

**Keen St.,**

**Paterson, N. J.**

## The economy of 3-at-a-time

Is yours henceforth with a

### Sellew Adjustable

### \*\*\* Drill Head \*\*\*

In these days of high labor costs you cannot afford to waste any valuable time—one hole at a time is too slow.

We also make Special Drill Heads with fixed spindles.

*Write us today*

**SELLEW MACHINE TOOL CO.,**

Pawtucket,  
Rhode Island



## "Buhr" Drill Heads

Adjustable and Fixed Center

**All-Ball-Bearing**

Adjustable from 2 to 12  
spindles.

Fixed center, any number  
of spindles.

We guarantee our Heads  
to stand up to capacity.

**Nelson-Blanck Mfg. Company**

Detroit, Mich.

# Model "E-50" Sensitive Bench Drill Press

This 2-speed, direct motor drive, high-speed ball bearing drill is especially designed to care for all work, ranging from the smallest to a  $\frac{1}{4}$ " hole.

Can be furnished with special pulleys to drive main spindle any speed up to 10,000 R. P. M.

Main spindle is heat treated and ground to size; it is guided through a quill with support at each end in an annular ball bearing.

End thrust is taken up by an end thrust ball bearing under feed arm.

A quick adjustable table has a working surface  $5\frac{1}{2}$ " x 5", and will take work up to  $4\frac{3}{8}$ " in height.

Surface of table is ground to insure accuracy.

Table has a self-cleaning taper, which keeps the precisely ground main column free from chips, and serves also as a guard to prevent injury to column.

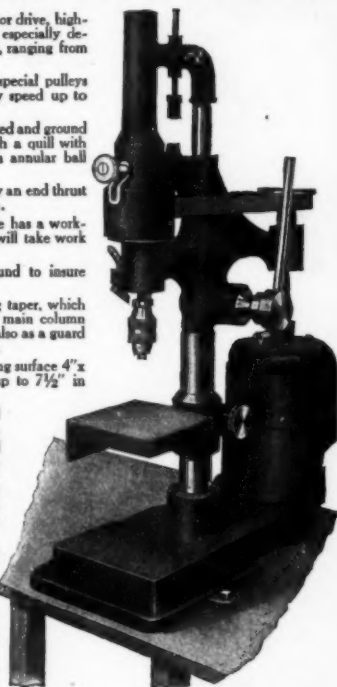
Base has a ground working surface 4" x 6", and will take work up to  $7\frac{1}{2}$ " in height.

Base has oil groove and self-cleaning column support.

Your attention is called to another special feature, which is a spindle lock enabling quick changes of drills without the operator's hands coming in contact with belt or pulleys.

An idler pulley takes up any belt stretch which may occur in the endless woven canvas belt, without impairing sensitiveness of machine.

Front pulley and upper part of spindle are guarded by a semi-tubular guard insuring safety. Machine may be operated either by hand or foot control.

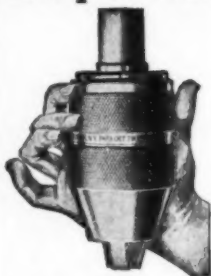


Height over all.....24"  
Base..... $7\frac{1}{2}$ " x 18"  
Diameter of spindle..... $7/16$ "

Spindle feed..... $2\frac{1}{4}$ "  
Weight.....62 lbs.  
Will drill to center of a 6" circle.

**The High Speed Hammer Co., Inc.**  
Dept. 14  
Rochester, N. Y.

## Eclipse Self - Tightening Drill Chuck



Roller bearing.

Quickest and easiest grip, and it never slips.

Self-tightening. No keys or wrenches.

It has no rival in its combination of quick and firm gripping, easy release, simplicity and accuracy.

Saves time and money on high speed drills.

*You need it now. Why wait?*

**Nielsen-Barton Chuck Co.,** 106 S. Jefferson St. CHICAGO, ILL.

Also makers of ARBORS for all kinds of Chucks

**YOUNG, CORLEY & DOLAN, Inc.,** 115 Broadway, NEW YORK CITY  
*New York District Agents*

## Kelly PRODUCTION Tools



**"XX Type C" Head**  
For Boring Bars



**Rigid Type Tools**  
**Adjustable—Replaceable Blades**

*Send for our Catalog J-5*

**THE KELLY REAMER CO.,** Cleveland, O.

**COUNTER  
BORES**



ADJUSTABLE  
AND  
REPLACEABLE  
HIGH-SPEED  
STEEL BLADES  
HARDENED  
AND GRINDING  
REPLACEABLE  
SURFACE  
BORING



# Drilling Machines

## For Bench Use

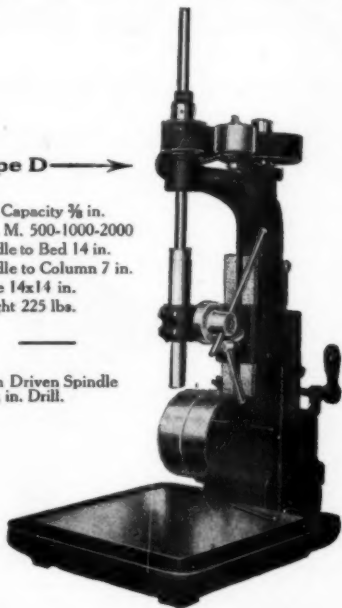
Hand and Power Feed

Gear Driven

Type D →

Drill Capacity  $\frac{3}{8}$  in.  
R. P. M. 500-1000-2000  
Spindle to Bed 14 in.  
Spindle to Column 7 in.  
Table 14x14 in.  
Weight 225 lbs.

Chain Driven Spindle  
for  $\frac{1}{4}$  in. Drill.



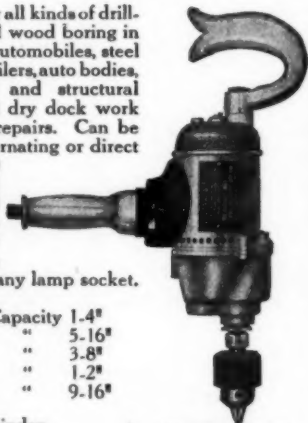
**The Taylor & Fenn Co.**  
Hartford, Conn.

# Thor

## Universal Electric Drills

Licensed Under Burke Universal Motor Patent

Indispensable for all kinds of drilling, reaming and wood boring in the building of automobiles, steel and wood cars, boilers, auto bodies, and in railroad and structural shops, ship and dry dock work and machinery repairs. Can be operated on alternating or direct current, 110 to 250 volts. Furnished with cord and suitable feed attachment ready for immediate use. Attach to any lamp socket.



000	Drilling Capacity	1-4"
00	"	5-16"
0	"	3-8"
01	"	1-2"
1	"	9-16"

No. 6 Electric Grinder.

Jacobs Chucks used as regular equipment.

## Independent Pneumatic Tool Company

Chicago	New York	Pittsburgh	Cleveland
Detroit	San Francisco	Birmingham	Montreal

# The EDLUND Sensitive Drilling Machine

High Speed—Quick Change  
With One to Six Spindles  
Ball Bearing Throughout

## *Some of its Features*

Ten ball bearings are used on each spindle, and a small reservoir at the top of spindle sleeve provides perfect lubrication without frequent oiling.

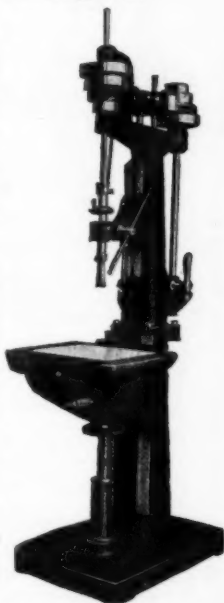
In transmitting the power a straight endless belt is used, eliminating the objectionable quarter turn.

The feed pinion bearing is extra long, and the sliding arm is extra large, having a 9" bearing surface on column. The splash system of lubricating is used.

Speed changes are made instantly from operator's position by simply shifting a handle a quarter turn. The belt can be shifted from either side of machine.

The frame is of heavy, one-piece construction, with extra large base.

There are four spindle speeds of 510, 816, 1273 and 2038 r. p. m. with drive pulley running at 500.



*Specifications explain more fully; may we send them?*

**Edlund Machinery Company, Inc.**  
260-300 Huntington Ave., Cortland, N. Y., U. S. A.



## The Murchey Collapsing Taps

**Guaranteed to Save Money**

Wherever solid taps have been used, Murchey Collapsing Taps will do the work far more quickly and economically, and with less trouble. No stripping. No reversing. No damage to threads. Simply change chasers in half the time.

They are adapted to all styles of machines and every kind of work from 1" to 12".

Send us blueprints or samples of work with your order, and you'll be surprised at the results. If not satisfied in 10 days, you may return the tap.

**Murchey Machine & Tool Co.**  
58 Porter Street, Detroit, Mich.



## The Mandrel That Saves High-Pay Time

A set of NICHOLSON EXPANDING MANDRELS will do more and better work than all your old solid ones. You can save the time your men now waste "knocking down" and searching for different mandrels for different jobs.

### Nicholson Expanding Mandrels

will fit any size hole—round or square—from  $\frac{1}{2}$ " to 7" and do it instantly. Learn what a saving NICHOLSONS will mean to you. Sent on 30 day trial to prove their value. Write to-day.

**W. H. Nicholson & Company**  
117 Oregon St., WILKES-BARRE, PA.



## Silver's 20" Upright Drill

There's a similarity between *some* drills and *some* autos in this respect—they have been built and used for so many years that there's absolutely no doubt about their giving top-notch service. The Silver line has been making good for more than three score years.

Their accuracy and convenience make it easy to reach and maintain maximum production. Your choice of plain lever feed, lever and wheel feed, power feed and automatic stop, or with back gearing; round or square base. Our copyrighted catalog sent gladly on request.

**The Silver Mfg. Co., 295 Broadway, Salem, Ohio**

## The Alert Boring And Facing Tool



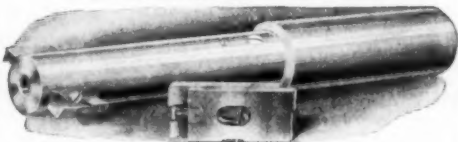
Made in three sizes of the toughest material and specially heat treated, with high speed steel blades.

For use on turret lathes, automatic screw machines and drill presses, for facing, counterboring and radiusing where a fine finish is desired, and for boring large holes where the cost of high-speed drills is prohibitive. It has bored very accurate holes with a good finish up to six inches deep.

*Write for descriptive circular "H"*

**The Alert Tool Company**  
237 N. 6th St., Philadelphia, Pa.

## Finished Holes Without Grinding Of Any Regular or Odd Size



### Madison Adjustable Boring Cutters and Bars

Adjustable to .00025", they make accurate and uniform holes of any regular or odd size. Rapidly replacing reamers on automatic machines, turret lathes, boring mills, etc., because they save time and do better work. Used by the U. S. Government and large motor concerns.

*We send them on trial to prove their efficiency*

**MADISON MANUFACTURING CO., - Muskegon, Mich.**

*Tool Agents Wanted.*

# The "Aurora"

Is a Better Drill  
And it is Sold at a Close Price

There are several things about the "Aurora" which make it better.

The large pulley diameter and the ratio of gearing used, give it the greatest "pull" or actual drilling power, by actual test. This means more work in a given time.

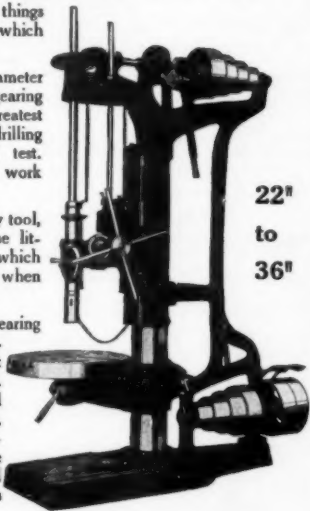
Then it is a sturdy tool, with many of those little improvements which amount to so much when taken all together.

An extra-large bearing makes the table fool-proof—it will not tilt if left unclamped. The worm wheel drops automatically, giving a positive release. The literature shows these and many other features in more detail.

Now the "Aurora" is not a cheap drill, and when we say it is sold at a close price, we mean it is low-priced for its real value. With an unusually low overhead, we do not have to "load" the factory cost so heavy to make a profit, and you get more "real drill" for your money.

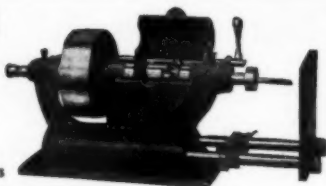
*You'll find it worth while to investigate the "Aurora"*

**The Aurora Tool Works**  
Aurora, Indiana, U. S. A.



## Workwell Tapping Machine

Built for Service  
Has Many Fine Points



2 bar slide to hold work straight with tap.

Steel gears 2" diameter, enclosed and running in oil.

Extra large hardened clutch. One loose pulley with hardened clutch. Non-slip tap holders. Die holder for threading outside threads. Stop adjustment for any depth of thread.

### MADE IN TWO SIZES.

Type B 2 for threads to  $\frac{1}{4}$ " diameter Type C 2 for threads to  $\frac{1}{2}$ " diameter

Give it a trial. Manufactured by

**Workwell Engineering & Mfg. Co.**

Dept. 2

616-620 W. Monroe St., Chicago, Ill.



## Tap in Safety!

Tap breaking troubles (and expense) are over when you begin to use the tried and proven

### Woodstock Improved Safety Tapping Chuck

Tap is automatically released the instant it binds or touches bottom. Not only prevents tap breakage, but it saves lots of valuable time. Satisfied users are the U. S. Government and makers of automobiles. Made in five sizes.

*Glad to send you one to try out  
on that tough job*

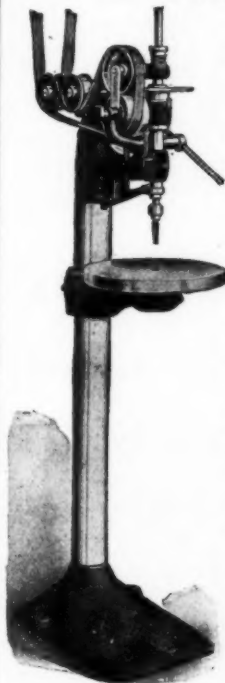
**Peter Bros. Mfg. Co.**

115 Railroad St.,

Algonquin, Ill.



# Rickert-Shafer Friction Driven Tapping Machines



Our **Vertical Tapping Machines**, as shown in cut, are made in  $\frac{1}{4}$ " and  $\frac{1}{2}$ " sizes, in the floor type only. The table is placed in the most convenient position for the operator, and the spindle travels to and from the work. Equipped throughout with SKF thrust bearings, and all annular bearings are made of bronze.

Also furnished in the **Horizontal** and **Radial** types. The **Horizontal** is made in 3-16", 5-16" and  $\frac{3}{8}$ " sizes, either bench or floor, and can be direct connected to motor. The **Radial Tappers**, which have capacities of  $\frac{1}{4}$ " and  $\frac{1}{2}$ " in steel, are rigid manufacturing machines for tapping automobile and machine tool parts with the least possible amount of handling.

The **Friction Drive**, which is used on all Rickert-Shafer Tapping Machines, is simple, easily controlled and highly efficient. The instantaneous reversing mechanism entirely eliminates all shock to the tap and prevents breakage.

*Write for our Tapping Machine Bulletin, which describes and illustrates the various styles and sizes of these time-saving and tap-saving machines.*

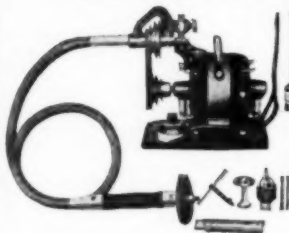
## Rickert-Shafer Company

1110 Cherry Street,

ERIE, PA.

## Tough and Durable as Steel

### The "Strand" Flexible Shaft



Our Flexible Grinder is a universal portable tool adaptable for heavy or light grinding in any shop. They always save time.

The flexible shaft is the important part about this kind of tool. The "Strand" shaft is made by special machinery, and is as tough and durable as a solid piece of steel.

*Our several types and sizes are the result of 15 years' practical experience. Write for Circulars*

**N. A. STRAND & CO.,** 625 W. Jackson Blvd.,  
Dept. H, CHICAGO

## Saves Moving Castings

Stow Flexible Shaft is Easily Carried

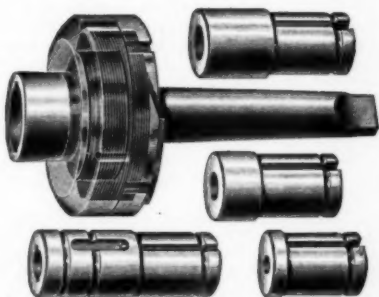


**HANDY**, not only for grinding castings, but for a hundred-and-one odd jobs of grinding, drilling, tapping, reaming, polishing, etc. Hurries up repair jobs. Write for illustrated circulars.

**Stow Flexible Shaft Company**  
26th & Callowhill Sts., Philadelphia, Pa.

# At Last

**A Perfect Drill and Tap Holder  
Which Gives Universal Satisfaction**



**The "Safety" Drill and Tap Holder**

Is made in four sizes, covering 0 to 2½ inches in diameter, and changes from drill to tap, or tap to drill, without stopping the spindle.

Saves time and taps. It is driven by friction, and the spindle revolves in case of any undue strain, preventing tap breakage. Permits tapping to the bottom.

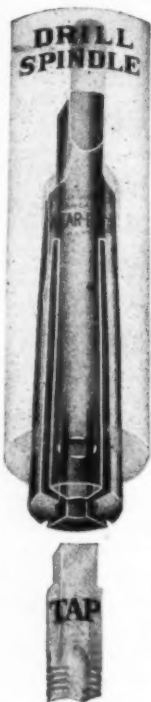
It is simple, efficient, rapid and accurate, and there is nothing about it to break or get out of order.

*You will like it the best when you get it  
Why not start the ball rolling now?*

**The Beaman & Smith Co.**  
**Providence, Rhode Island**

# "Wear-Ever" Tap Chuck

**Saves Time, Taps and Money**



*It saves time*, because it adjusts automatically—no screw to take up variations and true up tap. It is always ready for work and no time is lost in setting for various size taps.

*It saves taps*, because it always runs true, regardless of variation in the size of shanks, saving approximately 90 per cent of all tap breakage.

*It saves money*, because it saves time, because it saves taps, because it is made of a single piece and sold at a low price, and because the "Wear-Ever" outlasts several friction tap chucks.

## A Trial Order Is Convincing

The employer will like them, because they save time, taps and money for him.

The operator will like them, because they are so simple and easy to use.

*How about a trial set?  
You'll be pleased with it.*

**Scully-Jones & Company**

Suite 555 Railway Exchange Bldg.,

Chicago, Ill.

Where you have to ream a tough  
fibrous metal, you need a

## McCrosky IDEAL Reamer



The IDEAL blades are only four in number, are short and cut with a left-hand spiral out of solid high-speed steel. Yet, though the assembled IDEAL Reamer is apparently one solid piece, it has a wide range of adjustment, while one set of IDEAL blades will outlast a dozen solid reamers and can be replaced at low cost in a few minutes.

*The whole story of McCrosky Cost Cutting  
tools is found in our Efficiency Book No. 6*

## McCrosky Tool Corporation

(Formerly McCrosky Reamer Company)

**Meadville, Pa., U. S. A.**

Export Manager, B. Whittaker, 21 State St., New York

## Schipper Automatic Tapping Attachment

This modern device eliminates tap breakage. The chuck grips shank of tap and drives by square end. The release is simple, instantaneous and positive, operating automatically when maximum load is reached. Cold or hot weather or lack of lubricant does not affect it. Entire attachment revolves, which adds to life of bearings. Size No. 0—capacity up to  $\frac{3}{8}$ " tap, ready for delivery.



*Send for descriptive circular*

**Schipper Machine & Tool Co.**  
Aurora, Indiana

## GREATER SPEED HEAVIER CUTS

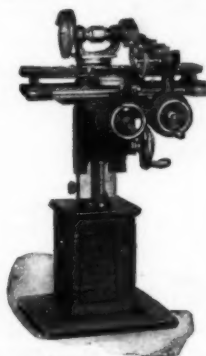
Possible on the



## UNIVERSAL TOOL GRINDER

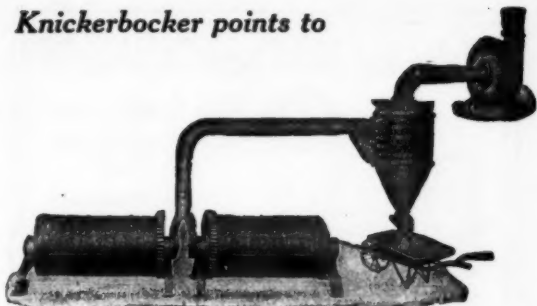
through the use of ball bearings in the wheel spindle.

Write for catalog illustrating and describing the other superiorities of the **STERLING GRINDER**



**McDONOUGH MFG. COMPANY,** Machine Tool  
Eau Claire, Wisconsin Department

**Knickerbocker points to**



**Greater efficiency—plus a saving of  
\$250 every 8 months**



"THE COARSE SAND from tumblers and sand blais and the emery from grinders, wear out the spider, the blades and the casing itself—of the fan. And you force this sand that cuts out iron and steel into a bunch of cloth screens to stop the sand and let the air pass on. The theory is fine—but how about the practice? Well—listen—a correspondent writes:

'We might advise we have a 300 unit dust collector made by----- This collector has been giving us more or less trouble

due to the fact that the curtains wear out about every eight months and must be replaced at an expense of about \$250. This arrester collects the dust from 12 tumbling mills.

THE REMEDY? Put a "Rarefied" Dust Collector ahead of this fan to collect the sand and emery and stop the cutting out of fan and screens, and you'll save money."

*Read the "reasons why" in our descriptive Booklet*

**The Knickerbocker Company**  
Jackson, Michigan

## Write for 300-Page Catalog Of



### "The Quality Line" of Power Punches and Shears

They range from the smallest to the largest, single and double, standard and special.

The picture shows our No. "A" Single Machine for general punching and shearing, belt or motor drive, Punches 2" through 1 1/4"; shears 2 1/4" round or 6" x 6" x 5/8" angles; splits 1 1/4" plates.

**The Long & Allstatter Company**

AMERICAN PUNCH AND SHEAR WORKS  
Hamilton, Ohio

## "QUICKWORK"

REGISTERED U.S. PATENT OFFICE

### Rotary Shears

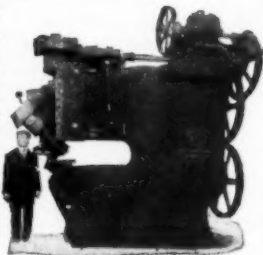
#### Made in 6 Sizes

Cut all gauges of sheet and plate metal up to 1 inch thick in straight or irregular shapes and openings without cutting in from side of sheet. Leaves square, true edge that requires no finishing. Used in building ships, boilers, tanks, cars & general plate and sheet metal work.

#### Save 50 to 90%

Eliminates Oxyacetylene cutting and plate planing

*Write for catalogue*

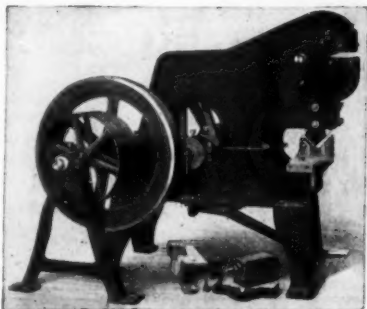


Patented June 3rd, 1913

**THE QUICKWORK COMPANY, St. Marys, Ohio, U. S. A.**



**Punches—Shears—Bending Rolls**  
**The Beloit**  
**Combined Power Punch And Shear**



**Built in six sizes. Nos. 51, 52, 53, 54, 55 and 56**

**Direct connected motor or belt drive**

This is the best all around punch and shear in a combined machine of moderate cost. It is heavy and substantial, and amply back geared to require the minimum amount of power; is strong, compact, and easy to operate. Can be equipped with angle shearing attachment, architectural jaw, or for special work.

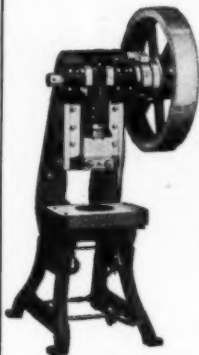
We are putting out a complete line of punching and shearing machinery in both power and hand tools, also light and heavy duty bending rolls.

We do not overrate the capacities of our machines.

*Write for catalogue and prices*

**Hendley & Whittemore Co.**  
**100 S. State St., Beloit, Wis.**

## Here Is A Press



With Plenty of Steam  
Back of THE PUNCH

HIGH DUTY  
**ROCKFORD**  
PUNCH PRESSES

Made in straight side and  
inclinable types. Their great  
power backed by rigid design  
enable them to do the work  
you demand and stand up to it.

*Write For Catalog*

**Rockford Iron Works**  
Rockford, Ill.

## WILLARD

**Inclinable  
Open Back  
Power Press**

Our long experience in the manufacture of Power Presses has enabled us to make the "Willard" a machine of the highest practical utility. We know it has no superior, and in many respects we doubt if it has its equal for all kinds of blank cutting, punching, perforating, forming and bending of sheet metal.



*Write for the full description*

**The Willard Press & Tool Co.**  
Cincinnati, Ohio

# Small Bench Press



EMCO "W" Bench Pwr. Punch Press

Weight, lbs.,.....130  
Stroke,..... $\frac{3}{4}$ " or  $1\frac{1}{4}$ "  
Adjustment,..... $\frac{1}{2}$ "  
Capacity... $\frac{3}{4}$ " x 1-16"  
Speed (r. p. m.), 300

## For Making Small Parts

Blanking Punching  
Forming Bending

## Specials—

Iron Stand,  
Die Block,  
Inclining Block,  
Motor, Counter.



Inclined



Now used on the following parts:

Buckles	Musical Instr.
Badges	Movie Machines
Cameras	Motors
Cartridges	✓ ✓ Novelties
Clocks	Optical Instr.
Electric Fixtures	Pianos
Frames	Sectional Mats
Film Holders	Sewing Machines
Gun Caps	Spark Plugs
✓ Gauges	Switch Plugs
Jewelry	Telephones
Kitchen Utensils	Washing Machs.
Lamps	Watches
Lamp Sockets	Washers

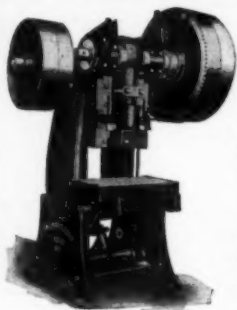
Check *times and places* you could use it on the above.

Has absolute Safety Stop for one stroke, tho foot is *kept on pedal*.

## The Enterprise Machinery Co.

28 S. Clinton St., Chicago, Ill.

$\frac{2}{3}$  of our orders are repeat orders. **WHY?**



## Rapid Production L-J Inclinable Power Presses

Their simplicity is matched by their great power and durability. For heavy duty and big output they have no equal.

### Our Dealers

Stocker-Rumely-Wachs Co., Chicago  
W. J. Baird Machinery Co., Detroit  
Herberts Machinery & Supply Co.,  
Los Angeles and San Francisco, Cal.  
J. L. Lucas & Son Inc., Bridgeport, Conn.  
Brown-McDonald Mch. Co., St. Louis  
Northern Machinery Co., Minneapolis  
Clark Machinery Co., Cleveland, Ohio  
Patterson Tool & Sup'y Co., Dayton, O.  
Dale-Brewster Mch. Co., New York  
Swind Machinery Co., Philadelphia, Pa.

*Write to the nearest, or*

**Loshbough-Jordan Tool & Mche. Co.**  
**Elkhart, Indiana**

## The Gray Sheet Metal Cutter Cuts All Intricate Patterns



It cuts such patterns as the one in the picture very rapidly, leaving the metal flat and edges smooth. It is not a rotary shear, for it will do the work of any shearing device and do it better, besides much other more difficult work. Feeds automatically like a sewing machine.

Nos. 0, 1, 2 and 3 are built with capacities as follows:

18"	throat,	capacity	1/8" plate
34"	"	"	3/16" "
36"	"	"	3/8" "
36"	"	"	5/8" "

*Better have the details. It may be just what you need.*

**W. J. SAVAGE CO., Knoxville, Tenn.**

# Universal Angle Plate

## A Wonderful Time Saver

Converts a plain miller or grinder into a universal, and on either milling, planing, boring, drilling, shaping or grinding it saves time and money far beyond its reasonable cost, because it sets the work quickly and holds it securely in exact position, and adjusts easily to any other desired angle or angles without disturbing work bolted to plate.



**8"x10" Worm Adjusting—Made in Four Sizes**

Used by prominent concerns all over the world, even in far India and Japan, because it is so handy, saves so much time and insures such accuracy, without requiring a heavy investment.

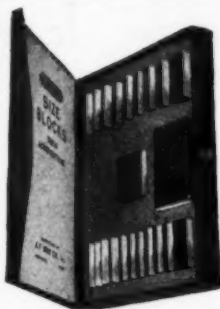
It moves through 360° horizontally and 90° vertically; has a vernier attachment reading to 5' for especially accurate work.

*It's worth knowing—and having; write for further facts*

**Boston Scale & Machine Co.**

100 Ruggles Street,

Roxbury, Mass.



A Set of 21

**LOWAY**

**Size Blocks**

**Only \$17.25**

For constant, practical, everyday use—not to be kept under lock and key on account of their cost.

Just the thing for laying out work on the bench, setting it up in a planer, miller, shaper, etc., or adjusting cutters to a particular operation, or for inspection work and checking.

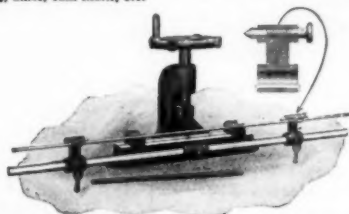
Our system of lettering, with reference table, shows at a glance the blocks to be used to secure any dimension.

**A. F. WAY CO., Inc., Hartford, Conn.**

Export Department, 77 Broad St., New York City

## Towsley Straightening Machine

ONE MAN, with this improved machine, can quickly and noiselessly take bends and short kinks out of bar stock up to 48"x2½" before it is put into the lathe. Also invaluable for repair work on bent journals, spindles, shafting, axles, cam shafts, etc.



With special shaped tools, it is easily adapted to bending, pressing and straightening tubing, channel, angle and tee iron, auto axles, etc.

*Better have full data. Will you write for it?*

**JOHN T. TOWSLEY MFG. CO., 1037 Woodrow St., CINCINNATI, OHIO**



## **If you do a thing at all Why not do it right?**

If you needed a motor truck, a hand-cart would be only a poor compromise between carrying by hand and economical hauling by power.

Likewise, when you need real fixtures in your factory, makeshift wooden bins, shelving and lockers are only a poor compromise between hooks or nails on the one hand and permanent equipment of steel on the other.

### **Terrell's Flexible Steel Fixtures**

Have to be paid for only once, and they last into another generation or more with practically no expense. They save in every way from the day they are put in, and they are better in every respect. So why not do it right while you are at it?

*Glad to help you with all the information we can give*

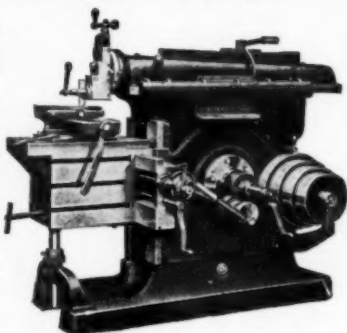
## **Terrell's Equipment Company**

Hall & Division Sts., Grand Rapids, Mich.

# SHAPERS

12", 14", 16"  
Plain Crank,  
16", 20", 25"  
B. G. Crank,  
either Cone  
Driven or  
through  
Speed Box.

28" and 32"  
Back Gear-  
ed Crank,  
Single Pul-  
ley Drive.



**The Smith & Mills Co.** Station B.,  
Cincinnati, O., U.S.A.

## Shapers

The best medium  
priced Shaper on  
the market.

Built in 16", 18",  
and 24" sizes, all  
back geared crank  
machines.

A few for early  
delivery.



**The Osborne & Sexton Mchy. Co.**  
Columbus, Ohio



# Embodies All Essentials

The Rhodes Combined Shaper and Slotter  
is a Small Machine of Great Utility

Saves  
Time



Saves  
Space

With the same conveniences as the larger and more expensive machines, this handy, compact tool does the work easier and quicker, and is therefore more efficient on small work, including dies, tools, models, etc. The work is uniformly accurate and dependable.

It is universally popular, being sold now in practically every country in the world. Its economy stands out stronger as labor costs soar, giving you splendid returns on your investment. You can have it as a 7½ in. horizontal, 3½ in. vertical, and a combination of the two, in both the floor and bench type.

*A production and profit booster. Write for circular.*

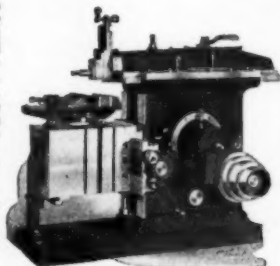
**Rhodes Mfg. Company**  
Hartford, Conn.

# COLUMBIA HEAVY DUTY SHAPERS

Driving cone bracket is self-supporting—no outer brace required. Secured to large planed and scraped bearing on column by four cap screws. Carries cast iron sleeve, ring-oiling, to which cone is attached. All parts large and well proportioned. An easy-running, substantial, long-wearing bearing.

Another good Columbia feature.

Full details upon request, covering sizes 16", 20", 24" and 28".



**The Columbia Machine Tool Company**  
Hamilton, Ohio

Pat. Jan. 30, 1917

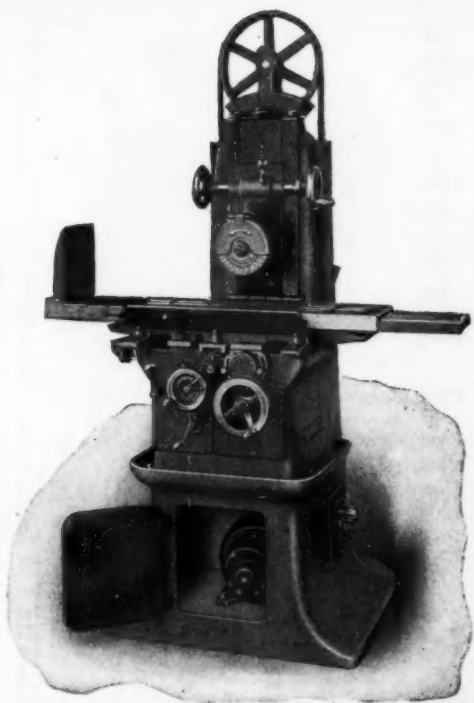
## Just What I Want



Automatic Extension Reel for Electric Lamps.  
Light just where wanted.  
25 ft. of cord.  
Automatically locks and rewinds.  
Approved by underwriters.

**The Cincinnati Specialty Mfg. Co., Inc.**  
1913-21 Powers St., Cincinnati, Ohio

Branch Offices:  
205 Abbott Bldg., Philadelphia, Pa.; 39-41 Cortlandt St., New York City



## **Strictly Modern**

### **The Abrasive Tool Room Surface Grinder**

Fifty per cent heavier and more rigid than any other machine of its type, it shows the first distinct advance made in years in modernizing the tool-room surface grinder. May we send the specifications?

**Abrasive Machine Tool Co.**

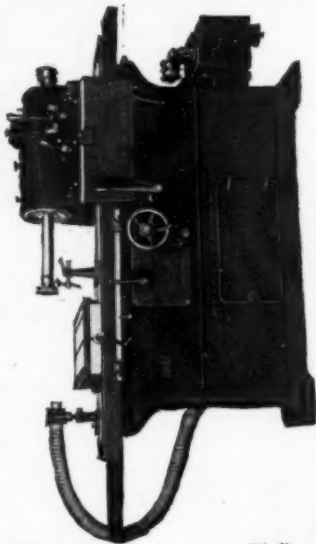
**East Providence, R. I.**

# Accuracy and Precision

are followed out to the last detail in the construction and testing of the

## Whitney Cylinder Grinder

equipped for grinding all kinds of Gasoline Engine Cylinders.

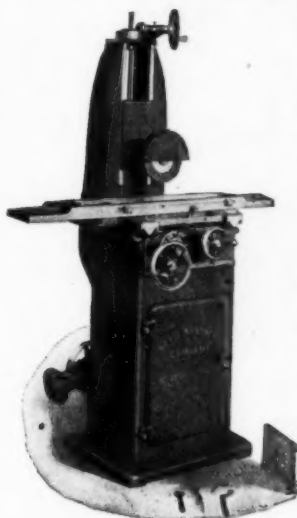


*Write for new catalog*

**BAXTER D. WHITNEY & SON, Inc., Winchendon, Mass, U. S. A.**

# Reid No. 2 Surface Grinder

A Machine of Exceptional Rigidity



Proper accuracy and finish on precision work can be secured only by abrasive wheels in a suitably designed machine, in which *rigidity* must be the backbone of both accuracy and production.

## The Reid No. 2 Surface Grinder

is built with special reference to *extreme rigidity*, with a true-running spindle and with the closest adjustments.

The spindle is hardened, ground and lapped, and runs in phosphor bronze bearings, with adjustments for both wear and end play. The boxes are fitted to the head, which is scraped to the back arm.

The Reid No. 2 grinds work 18"x6"x11½". Table travel automatic in both directions. Cross feed also automatic, but cross feed mechanism may be disengaged to facilitate hand feeding for those who prefer it. Furnished for motor drive if desired.

*Write for full description of this rigid, accurate grinder*

**Reid Bros Co.** 59 Park St.  
Beverly, Mass.

Export Department, 77 Broad St., New York City  
Also Manufacturers of the Reid Universal Angle Fixture



## Premier Universal Tool and Cutter Grinder

With a swing of 8" and capacity of 15" between centers, together with the regular equipment furnished, it will grind almost any cutter or other tool used in a modern tool room. Workmanship, material and design of the highest quality.

*Write for descriptive  
Circular*

**Immediate Delivery**

## Simmons 10" Universal Index Centers



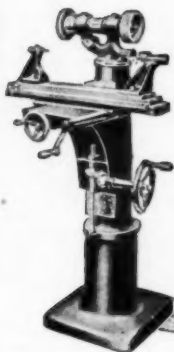
Manufactured with the idea of supplying the market with a device in which accuracy, durability and simplicity are the main issues and in which no one feature is sacrificed for another.

The price is the lowest consistent in keeping with the above standards. Our production is such that immediate delivery can be made.

***You need one? Order now!***

**Simmons Machine Co., Inc., Albany, N. Y.**

New York, 1001 Singer Bldg. Detroit, 804 Dime Savings Bank Bldg.  
Buffalo, 358 Ellicott Square



## Why Pay More?

Before investing in a new grinder it will pay you to become thoroughly acquainted with the possibilities offered in the improved "Wells" No. 190 Grinder—a reasonably priced machine whose performance duplicates that of the more expensive grinders.

Most of the leading Machine Tool Dealers throughout the United States carry

## "Wells" No. 190 Grinders



in stock. They will be glad to show you just where this machine will save you money.



Machine Tool Catalog No. 39-H describes this and other G.T.D. Machines in detail. Ask the nearest dealer for a copy—or write direct to

Machine Tool Division

Greenfield Tap and Die Corporation

Greenfield,  
Massachusetts,  
U. S. A.





Starting and finishing this job with one set-up—from machining the casting to grinding the hardened bearing in place—is a good illustration of the DUMORE grinder on production. This method positively aligns each bearing with the rest of the machining, at the same time correcting inaccuracies caused by tempering. And the danger of chatter-marks, taper or bell-mouth is eliminated because the DUMORE grinder is perfectly balanced throughout and gives correct cutting speeds to even small emery wheels. Limits of .0001" are easily maintained.

There are any number of jobs in your shop for the DUMORE grinder which this illustration will suggest. Give your workmen the use of a tool that will speed their work, turn out better tools and improve the quality of your product. The DUMORE grinder is light and portable—may be carried anywhere in the shop and is quickly set up.

Ask your dealer for a demonstration. If he is not able to supply your needs, write us for further information and prices.

**WISCONSIN ELECTRIC COMPANY**

4313 Sixteenth Street

Racine, Wis.

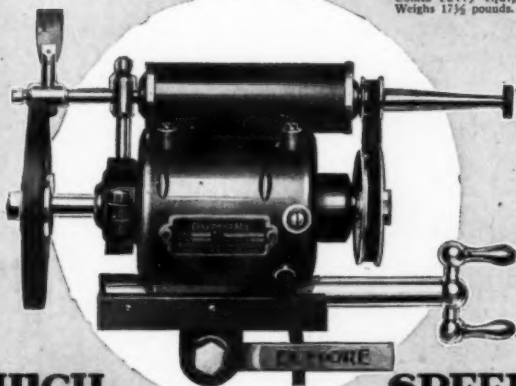
# DUMORE



# Grinding Hardened Bearings In Place

## EQUIPMENT A

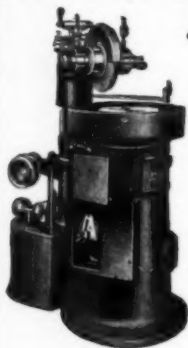
For general tool room use. Includes High Speed Internal Spindle A with reach of 3 inches. 30,000 R.P.M. Comes fully equipped. Weighs 17½ pounds.



HIGH

SPEED

# GRINDERS



## **.00025" Accuracy**

In grinding flat, convex and concave surfaces on the

### **12" Bristol Rotary Precision Grinder**

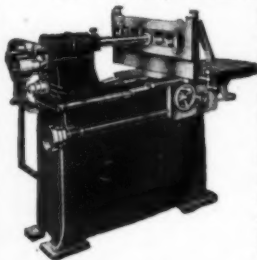
You cannot secure greater accuracy, and why should you accept less?

*May we send you the complete description?*

**Bristol Machine Tool Co., Bristol, Conn.**  
*Successors to The C. G. Garrigus Machine Co.*

## **Schmidt's Internal Grinder**

**For Tractor, Truck and Auto Engines**



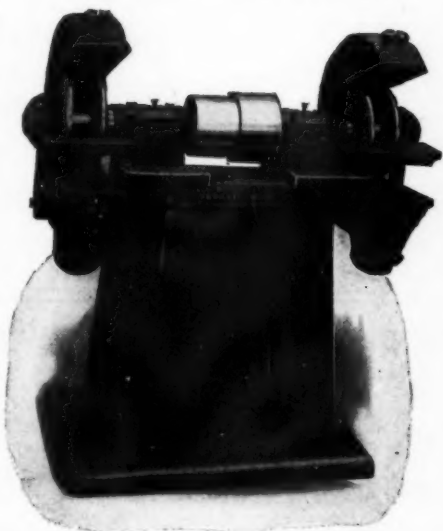
Especially adapted to regrinding auto engine cylinders, and unsurpassed for any internal grinding within its capacity.

Automatic reverse feed. Ball bearing in rear end of emery wheel spindle and rocker arm pulley shaft. It is simple, compact, quick, accurate and dependable.

*Write for full description. Prompt delivery.*

**B. L. Schmidt Co., Dept. A 8, Davenport, Ia.**

# Grind it on a "Blount"



**No. 6½**

Our eight sizes meet all requirements of general grinding work. The large bearings insure accurate work under continuous heavy load.

**J. G. BLOUNT CO., Everett, Mass.**

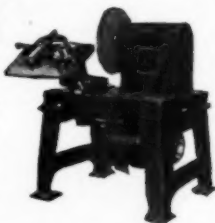
## Replaces Costly Cutter Grinders

**Fenn No. 1 is an all around economy tool**

Designed especially for grinding gear cutters, but can also be used on various formed milling cutters. Takes only 30 seconds to change from grinding a 40 pitch cutter to 3 pitch cutter.

Self-contained motor and cord attached. Take it under your arm to any bench in the shop, and connect to 100 volt A. C. lamp socket. Will also do other grinding jobs.

*Let us mail you full description  
and the interesting price*



## Fenn Manufacturing Company

Hartford, Conn.

W. A. FENN

W. L. FENN

Cable Address "Fenn"—Western Union Code

## Manhattan Surface Grinder

**Powerful—Accurate—Silent**



In building this high grade tool we put in every item which experience has shown to be advantageous, and besides have embodied a number of special features of our own. *It's a revelation in quiet efficiency.*

There is ample weight and rigidity to eliminate vibration, yet it takes but little floor space. The large table is surface-ground with its own wheel. Graduated dials on both feeds insure great accuracy.

*The specifications are interesting  
Read them before you buy*

## Manhattan Machine & Tool Works

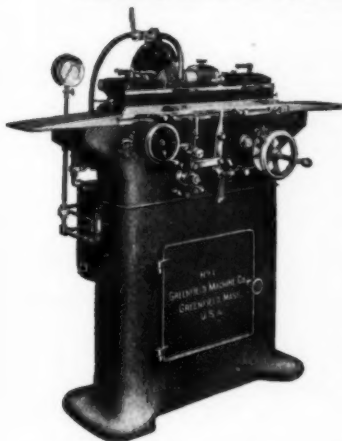
Dept. A.,

Grand Rapids, Mich.

The *Greenfield*

# Plain Grinding Machine

A Low-Cost Machine for the Economical  
Grinding of Small Cylindrical Parts



It will do  
your small  
work with a  
low initial  
investment  
and at a  
great saving  
in cost

Its low cost now enables many manufacturers who could not or would not invest in more expensive equipment, to grind their small work to splendid advantage.

The hydraulic table feed eliminates a lot of expensive mechanism and permits two to three times the table speeds of larger machines, insuring great economy and smoothness in operation.

*Ask for folder and send sketches or samples of small parts*

**Greenfield Machine Company**  
Greenfield, Mass., U. S. A.

# Ott Grinders

Combine the essentials of  
**ACCURACY** and **RIGIDITY**  
with **SIMPLICITY** of design

Simplicity accounts for their price, and for  
their popularity among good operators.

5"x18" Plain—10"x32" Universal—6"x6" Internal

**Ott Grinder Company**

200 West Tenth St., Indianapolis, Ind.

## Partridge Combination Grinding and Polishing Lathe



With Ring Oiling Bearings

Practically indispensable for  
garages, tire repair shops,  
electro-platers, small machine  
shops, etc.

*Write for Circulars*

**E. O. Partridge**

2041-49 W. Lake St., Chicago

Also Bench, Column & Cabinet Grinders, Polish-  
ing Lathes, Light Punch Presses, Hollow Mills,  
Countershafts, Chuck Arbors and Saw Mandrels,

# **W & M No. 1**

## **Surface Grinder**



### **No. 1 Hand Feed Surface Grinder without the Drill Grinding Attachment**

High grade ball bearings and accurate design makes rapidity and accuracy certain when this Grinder is installed.

*Circular on request*

**Wilmarth & Morman Co.**

**Master Grinder Makers**

**1185 Monroe Ave., N. W., Grand Rapids, Mich., U. S. A.**



# Blueprints

## The Wickes

Continuous Electric.  
Sells at **half the price.** Uses **half the current** of others. Perfect prints up to 48" in width and of **unlimited length.**

Dept. H

Wickes Bros., Water Street,  
Saginaw, Mich.

# The Walton Tap Extractor

Quickly Removes a Broken Tap

Without Injuring the Threads



When a tap is broken at or below the surface, it often means the loss of considerable time. The Walton Extractor will remove the broken tap easily and quickly, saving both the workmen's time and costly delays.

We are glad to send a 60-day free trial of any size from No. 8 to 1 1/4", and it is not unusual for it to more than pay for itself—at times considerably more—before the approval period expires.

*Folder, or trial, or both, upon request*

**THE WALTON CO., Hartford, Conn.**



# Tool Sharpening Made Easy

The Thompson Universal Grinder has no equal for all kinds of Forms of Cutters and Reamers and Small Tools

## Ease of Operation

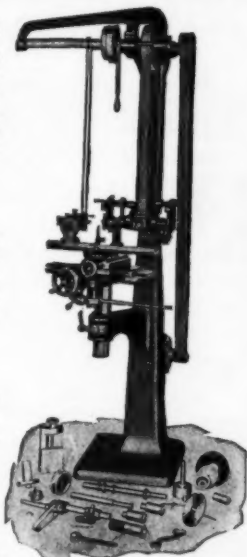
The many refinements of design and construction make it easy for the average operator to do accurate grinding in less time than needed heretofore.

## Sharp Tools

are an economy in many ways, and always help to increase production. Dull tools are a handicap in these days of keen competition.

## Wide Range

It does circular, internal and surface grinding on cutters, reamers, counterbores, drill bushings, arbors, small machine parts, etc. Tool grinding is done on one side and cutter sharpening on the other side without interference.



Self-contained—For motor drive

*A profusely illustrated folder gives many practical hints and full details of the many time-saving conveniences*

**The Thompson Grinder Co.**  
Springfield, Ohio



Straight Shank Turning Tool



Boring Tool



Straight Shank Cut-off Tool

## Armstrong Tool Holders

Make One Pound  
of High Speed Steel  
go as far as Ten  
Pounds in Forged  
Tools.

Grand Prize Winners at  
Panama-Pacific Exposition.

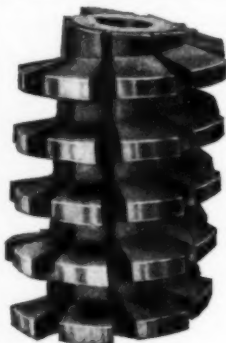
*Complete Catalog Free.*



**Armstrong Bros. Tool Co.**

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.



The Michigan Line of  
"Quality Tools" includes

**Hobs  
Form Milling Cutters  
and Special Tools**

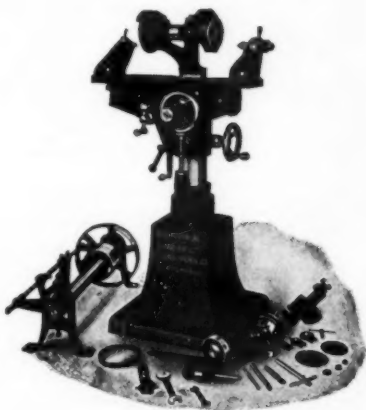
It is by their performance  
only that you know them, and  
the performance of Michigan  
"Quality Tools" everywhere  
has fully justified the care we  
have put into their manufac-  
ture. You will appreciate their  
working qualities and our  
prompt deliveries.

*Let us quote on  
your requirements*

**Michigan Tool Company**  
Detroit, Mich., U. S. A.

# Grand Rapids No. 1

Universal Cutter, Reamer  
and Tool Grinder



Simple in Design  
Efficient in Service  
Accurate in Workmanship  
Economical in Cost

*Ask for bulletin giving full particulars*

**Grand Rapids Grinding Machine Co.**

17 Ottawa Ave., N. W.  
Grand Rapids, Michigan, U. S. A.

## It Takes But A Second



### For a Cheap Boy or Girl To Make a Perfect Rivet

If you want a machine that will give you perfect rivets, as tight or loose as desired, with highly polished heads, and without blows, tool marks or noise—

### The GRANT Rotary Rivet Spinner

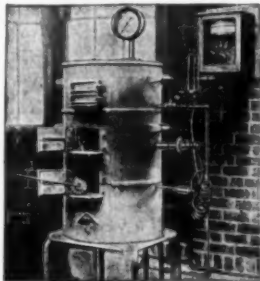
will give you just those results quickly, easily and economically.

*Will you let us prove up?*

**The Grant Mfg. & Machine Co.**  
C. E. Station, Bridgeport, Conn.

## Better Heat Treating

At a Saving in Cost, Time and Space



### The "TRIAD" 3-in-1 Furnace

There are three compartments, for pre-heating, high-heating and drawing the temper, and one burner, for gas or oil, heats them all.

Heats carbon steel to hardening temperature in 10 minutes and high speed steel in 20 minutes from a cold start.

Takes only two feet square of floor space. Costs less to buy and operate. Safer in results—no pitting or scaling from oxidation.

Write for Catalog No. 5

**The W. R. Bennett Co.,** P. O. Drawer X  
Elmwood, Conn.

# Riveting Revolutionized

"The Hammer with the human stroke"

**Heads Rivets Cold**



Heads 'em tight or loose, flush, countersunk, or finishes heads any shape desired at the rate of:—

A rivet a second, sizes up to 3-16 in.

A rivet in two seconds, sizes 1-4 to 3-8 in.

A rivet in three seconds, sizes 7-16 to 5-8 in.

## **Built in Eight Sizes**

To handle rivets from the smallest, up to 1½" in diameter. Send us sample assembly parts with rivets or sketch of your work, and let US shoulder your riveting problems.

*Send for the High Speed Hammer Book*

Department 13

**The High Speed Hammer Co., Inc.**

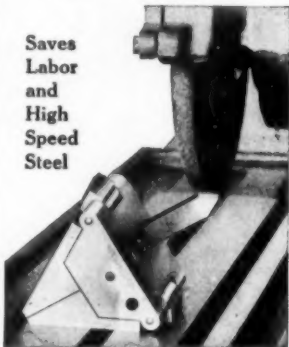
Rochester, New York

# The Boss Jig

## For Holding Thread Cutting Tools

While grinding 29 degrees acme, or 60 degrees  
U. S. standard, or any degree between 29 and 60

Saves  
Labor  
and  
High  
Speed  
Steel



The slotted screw in center of face controls the various angles required by turning, which causes the hinged wings to move in and out.

Clearance on thread tool is automatically provided for as the hinged wings are offset the correct degree to produce clearance.

Has containers for 3/8" and 5/16" tools; also furnished in special sizes.

The thread tool is accurately ground on both sides and top without removing from the jig.

Retail price \$15.00, delivered anywhere in the United States.  
We shall be glad to quote terms to jobbers upon request.



*The biggest little tool made; better order today*

**G-L Sales Company**

Sole Distributors

**521-523 W. 26th St., New York City**

**They never fail  
to hit the spot  
right—no matter  
what the angle**



## **Knight Milling and Drilling Machines**

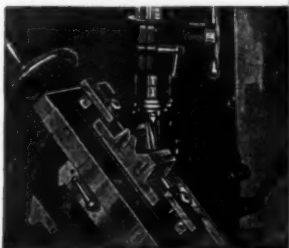
A HUNDRED pages of description won't tell you nearly as much about this versatile tool as one hundred minutes of actual use in your shop would do. The latter would so clearly demonstrate its great value on ordinary work, and its even greater value for the hard, unusual kind.

A real mechanic who has a "Knight" as a "side-pardner" is seldom if ever up against it. No matter how difficult the work, there's always a way with a "Knight"—and it's not an expensive way either. The three sizes are all unusual time savers.

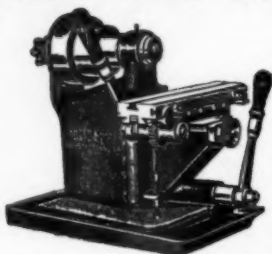
### **W. B. Knight Machinery Co.**

**920 W. Pine St., St. Louis, Mo.**

*Send for our  
Booklet which  
gives many  
practical pointers  
for tool room  
and shop*



## Just The Machine



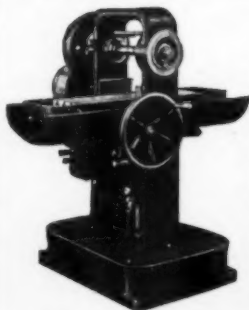
for those light cuts on details for Fire-arms, Sewing Machines, Typewriters, Bicycles, Electrical work, and a thousand and one other details used in the manufacture of the various products of the manufacturing world.

*Send for descriptive circular*

**The Carter & Hakes Machine Co.**  
West Winsted, Conn., U. S. A.

AGENTS—for New England and New York, Hill, Clarke & Co.  
WESTERN AGENTS—Marshall & Huschart Machinery Co.,  
Chicago, St. Louis, Indianapolis.

## Briggs High Duty Miller



**Is superior in  
both convenience  
and capacity**

Designed primarily for form and gang milling of steel parts for autos, guns, etc., it has also made good in tool room and shop.

Has a greater driving power than any other tool of its size and weight. Takes heavy, rapid cuts without any chatter. Eight changes of feed.

*Augments economy wherever installed. Write for booklet*

**GOOLEY & EDLUND, Inc., Cortland, N. Y.**



# BECKER

The Machine that Gives the Smooth Finish



Model SD

## Superiority of Ranges

is a salient feature that has earned a high place in the Machine Tool Industry for

## Becker Belt Driven Millers

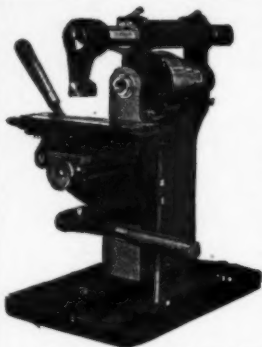
The Internal Belt Drive provides an elastic feed to the spindle, eliminating chatter and prolonging the life of the cutter used.

As a production tool The Becker is without an equal.

*Circular S601 tells why. Write for it today*

**Becker Milling Machine Co.**

**Hyde Park, Boston, Mass.**



## Burke's No. 3 Bench Millers

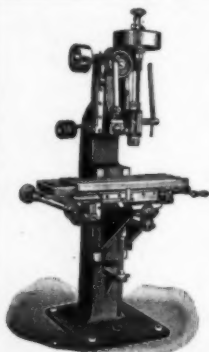
### Are Seasoned Tools

Our system of tests insures accuracy, and our methods of construction make it permanent. Frames and parts are carried 6 to 8 months, after work begins on them, before the completed tools receive our final O. K., and all parts are finished and fitted with exceptional care.

Longitudinal feed, 6 in.;  
traverse feed,  $3\frac{1}{2}$  in.; vertical  
motion of knee, 8 $\frac{1}{2}$  in.; table  
surface, 3 $\frac{1}{2}$ x12 inch.

*Write for Catalog, which also shows larger and smaller sizes.*

**The Burke Machine Tool Co.**  
Conneaut, Ohio



## Rapid, Accurate Vertical Miller

### With Slotting Attachment

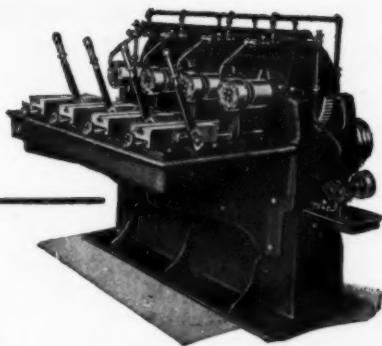
The Clough No. 2 excels in convenience and output, and is dependable for making blanking dies, die sinking, metal patterns and light machine work.

Size of table.....28"x9 $\frac{1}{4}$ "  
Lengthways auto feed 21"  
Cross motion..... 9"  
Vertical adjustment..... 15"

The Slotting Attachment has a 12" slide and 4 $\frac{1}{8}$ " stroke, and is strongly bolted to the machine.

*A tool that's always busy; write for folder*

**R. M. CLOUGH, Meriden, Conn.**



## Capacity 1100, $\frac{5}{8}$ " Threads $1\frac{3}{4}$ " Long, per Hour

### Other Sizes in Proportion

The machine illustrated is our Four Spindle Geared Threading Machine designed for a large output on diameters within its range. It is equipped with All-Steel Automatically Opening Die Heads of the same type as used on high grade screw machines. These Die Heads are practically self-cleaning because of a free circulation of the oil inside so that foreign substances are flushed before they clog up the tool.

The chasers can be taken out or put into the die head without disturbing any other parts. Adjustments for variations in cutting sizes of tight and loose fitting threads can be made by simply turning an adjusting screw in the side of the die head.

The Threading Machine is provided with three step cone driving pulleys, giving three cutting speeds, suitable countershafts, rotary oil pump, oil reservoir, strainer and drip pan, four all steel automatic die heads for cutting  $\frac{1}{4}$ " to  $\frac{7}{8}$ " or  $\frac{1}{8}$ " to  $1\frac{1}{4}$ " at option, and die operating mechanism. Geared  $3\frac{1}{3}$  to 1,  $5\frac{1}{2}$  to 1,  $6\frac{1}{2}$  to 1, to accommodate different diameters.

*Write us for Bulletins D, H, I, Q and R, giving complete data*

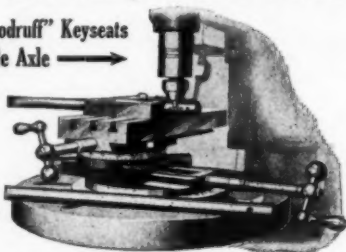
**The Webster & Perks Tool Co.**

Box 1340, Springfield, Ohio, U. S. A.

## Mills On Any Drill Press

Cutting "Woodruff" Keyseats  
In Automobile Axle →

For the  
Garage  
Diemaker  
Repair Shop  
Pattermaker



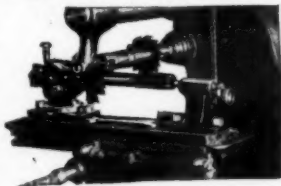
The Davis Milling Attachment and Compound Table can be used on any drill press from 14 to 42-in. swing. It is equally valuable in big and small shops, as it does most of the lighter jobs as well as a large, expensive machine; cuts all kinds of keyseats perfectly. Our cylinder reamers for reboring the Ford car, and our efficient air compressor are also attractively priced. Send for circulars.

**Hinckley Machine Works, HINCKLEY, ILL.**

## Transform Your Hand Miller

Our Dividing Head Makes it a Semi-Universal

THINK of the economy of being enabled to mill cutters, reamers, counterbores and a great variety of other small work with your hand miller—and doing it as quickly and accurately as with a big miller.



It is rotated very quickly into any number of divisions from 1 to 24 by even numbers. Small in cost but big in convenience—write us for full description and price.

**Whiting & Comstock**

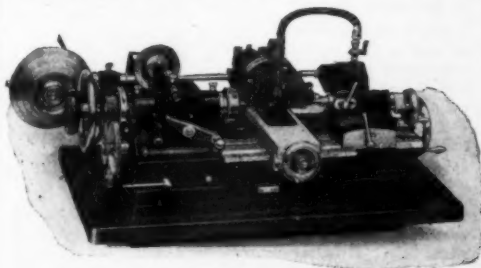
32 Union Place,

Hartford, Conn.

Export Department, 77 Broad St., New York City

# Waltham Thread Miller

Best Adapted For Work Not Over 2" Diam.



The name "Waltham" is synonymous with precision and dependability, and this modern machine comes up fully to established standards. It is for bench use.

The complete machine is for universal use, especially in tool rooms and experimental departments. When needed as a single purpose machine for manufacturing, certain parts may be omitted, which reduces the cost in proportion. Skilled workmen are not required in the latter instance, and several machines can be cared for by one operator.

For certain threads a multiple cutter may be used, and a complete thread produced in *one revolution of the work*, thereby greatly increasing production. It swings 3" over carriage. Length of thread cut if work is held on centers, 6"; if one end is held by a spring chuck, 7¼". We can also furnish a longer machine and floor stands to which standard motors can be attached.

Send us samples or blue prints of your work and we will gladly advise as to the best equipment, and make a production estimate

**Waltham Machine Works**  
Cutter & High Sts.,      Waltham, Mass.

## A Place For Everything

Pays Good Dividends—Always

### A Modern Bench

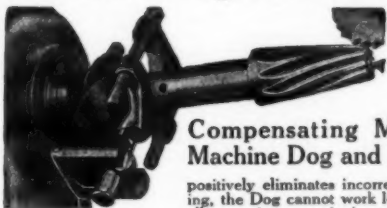
Solidly built, well finished, easy to clean, with a 5-inch guard around three sides of the top, six drawers, one blueprint slide, a shelf, and three large compartments for stock—a place for everything and everything in its place.



Installed in numbers by leading manufacturers to increase the efficiency of their tool makers and bench hands. It is a wonderful help. *Write for full particulars.*

**THE RITCHIE-WERTZ CO., Dayton, Ohio**

## No More Spoiled Work



R  
E  
D  
-  
E

### Compensating Milling Machine Dog and Driver

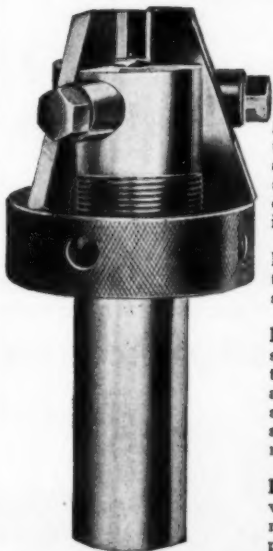
positively eliminates incorrect indexing, the Dog cannot work loose, and all cramping or springing of work is avoided. Invaluable for cutting gears and similar work. It assures correct spacing and true taper. The main factor of its universal success is the sliding tail with ball and socket joint.

*Used successfully in big plants and small ones  
Send for catalog of cost-saving tools*

**The Ready Tool Company**  
Bridgeport, Conn.

# Stronger Than Solid Tools

And Replaces Hundreds of Them  
Accurate—Efficient—Economical



## The Genesee Adjustable Hollow Mill

**Is accurate.** Adjusts to the 1,000th of an inch, and can not change in size as a solid tool will do after a few grindings.

**Is efficient.** Cuts 12" to 15" a minute in steel.

**Is economical.** One set of blades outlasts three to five solid tools, and are replaced at small cost. Only seven sizes cover all requirements from  $\frac{1}{4}$ " to 2".

**Is better in every way.** Saves time and money and increases production.

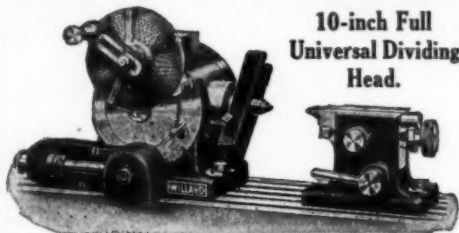
**Put Your Jobs Up To Our  
Engineers For Rapid Production**

**Genesee Manufacturing Co., Inc.**  
**Rochester, N. Y.**

**Manufacturers of Adjustable Hollow Mills, Facing Tools, and  
Inserted Tooth Face and Side Milling Cutters**

# THE WILLARD

**10-inch Full  
Universal Dividing  
Head.**



Right or left hand. Its exceedingly liberal proportions enable it to take care of the heaviest cuts on any plain milling machine. All parts interchangeable. Swivel head rotates from ten degrees below horizontal to ten degrees beyond vertical. Tailstock center can be set and securely clamped at any angle. An efficient locking device relieves the worm wheel and index pin of cutting strain. Wear between worm and wheel is taken up without disturbing their axial position. Driving mechanism for spiral cutting can be applied. One large index plate takes place of usual three, giving greater accuracy and more divisions. Write for complete description of this highly desirable tool.

**THE WILLARD PRESS & TOOL CO., Cincinnati, Ohio**

## Supreme, Lasting Accuracy

**Dickow's  
10-Inch  
Universal  
Index  
Centers**



In combination with their great simplicity and ease of operation, help to increase production. Put us to the test.

Patents Pending



**PROMPT DELIVERY**

**For Accuracy Get Dickow's**

*Sold by dealers. Write us today.*

**Fred. C. Dickow, 1858 W. Lake St., Chicago, Ill.**



# **"Steptoe" Index Centers**

**Accurate—Rigid—Universal**



**"STEPTOE" Index Centers have an 8" swing for use on small and medium sized Milling Machines.**

**Immediate delivery**

**Write for prices**

**Also Manufacturers of "STEPTOE" Shapers and Milling Machines.**

**The John Steptoe Company**  
**Cincinnati, Ohio**



**Davie Gauging Machine.**  
Graduations in .0001  
Height 17" — Length 15" — Width 9"

BURTON, GRIFFITHS & CO., Ltd.  
Ludgate Sq., Ludgate Hill, London, E.C.  
Agents for Great Britain  
SOC. ANONIMA ITALIANA ALFRED HERBERT, Milan, Italy. Agents for Italy

**For inspection work where limits are close and accuracy and speed essential**

1. Measuring Plug Gauges in readings of .0001
2. Measuring Interchangeable Parts in readings of .0001
3. Measuring Drill Jig Bushings in readings of .0001
4. Measuring Pistons in readings of .0001
5. Measuring Ball or Roller Bearings in readings of .0001
6. Testing Concentricity of Form Milling Cutters .0001
7. Testing Concentricity of Spindles of various designs .0001
8. Settling Shop Disputes over Micrometer Readings
9. Speeding up Production Gauging

Any attachments to suit your needs  
The Davie is Standard Throughout America and Europe  
22 in use in The Ford Motor Plant Alone

*Send for catalog*

**The Davie Tool Co.**  
E. 118th & Euclid Ave., Cleveland, O.

SOC. ANONYME ALFRED HERBERT  
47 Boulevard de Magenta, Paris  
Agents for France  
Agents for Italy

## Promotes Accuracy—Saves Time

**Universal Amplifying Gauge does the work of many snap gauges—is accurate to .0001"**

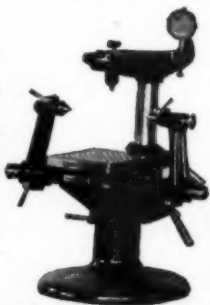
It registers every inaccuracy, either over or under size, in .0001"

When gauge is set, the parts can be gauged as fast as the workman can handle them. Handles parts of any shape up to 5½" on the plate and 8" between centers.

Is doing satisfactory work for a number of the largest automobile concerns.

*Catalog No. 100 explains fully*

**THE NORTH SIDE TOOL CO., Dayton, Ohio**  
Manufacturers of Special Tools, Dies, Jigs and Fixtures





## **“Advanced” Gear Cutting**

**Superior Automatic Gear Hobbers are setting new standards cutting gears of large diameters and coarse pitch in steel**

There is a rapidly growing demand for cut gears, and this machine brings down the cost of this class of work to a point where they may be profitably substituted for cast gears.

The “Superior” embodies a number of improvements over the older makes of gear hobbers. The large output gives you distinct advantages—it assures bed-rock economy.

Vibration has been reduced to the vanishing point by means of extra large ways on bed, a worm wheel nearly as large as the table, driven by a 10-inch worm and four ways on column, and the proper distribution of ample metal thruout all parts of the machine.

*We wish to add you to our rapidly growing list of satisfied customers. Write us freely about your needs and we will write fully about this modern machine.*

**Jones Superior Machine Company**  
**Chicago, Illinois**



## Hartford Taper Gages

Are as Simple as A. B. C.

And it is their very simplicity which makes them doubly valuable, as well as inexpensive.

They make it so easy for the workman to locate any taper inaccuracy at a glance, and it tells him just as quickly when his tapers are right.

They insure taper accuracy with such a saving of time, and they cost so little compared with what they do, that you should never turn tapers again without them.

*Don't let this good thing get by you  
We are willing to prove up, of course*

**Hartford Special Machinery Co.**

285 Homestead Ave.,      Hartford, Conn.

**Pulleys—Metal**  
**Pulleys—Wood**  
**Hangers—all kinds**  
**Couplings—all kinds**

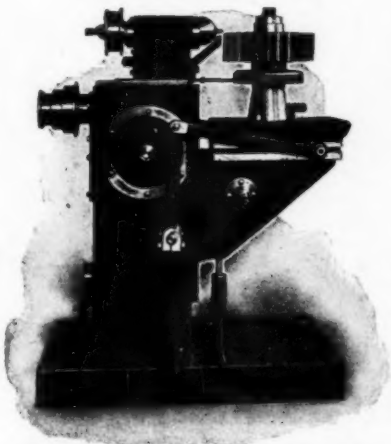
**At One-half Cost of New**

*Let us know your needs*

**Louis E. Rechtin & Bro.**

2215-19 Butler St.,      Cincinnati, Ohio

# Gear Tooth Rounding Revolutionized



## The Cross Gear Tooth Rounder

Has revolutionized gear tooth rounding in both economy and quality.

**Economy:** It is guaranteed to round 24 teeth per minute, any pitch  $\frac{1}{8}$  or finer.

**Quality:** Every tooth is a perfect half circle from tip to root—the only perfect form for sliding mesh gears.

*Wouldn't you like all the facts about this revolutionary economy-quality machine? Glad to furnish them upon request.*

## Cross Gear & Engine Company

Detroit, Michigan

Patented here and abroad; sold ONLY by us

## Has the Speed That Wins

**Peter Bros. Metal Cutter Helps to  
Keep Costs Down in Many Shops**

YOU HAVE TO PAY more for time and materials nowadays, but this speedy tool saves on both items. Cuts quickly thru all hardened steels and saves the costly material because it makes only the very thinnest cut. Smooth work—no grinding necessary. Doesn't draw the temper.

**8" Size \$17.50, with C. S.**  
Splendid for tool room. Cuts high-speed steel up to  $\frac{1}{2}$ " square.

**12" Size \$50, with C. S.**  
Cuts up to  $2\frac{1}{2}$ " diameter, round or square, at any angle up to 45 degrees. Ball bearing.

**15 Days' Free Trial**

Write us or ask your dealer

**PETER BROTHERS MFG. CO.**  
115 Railroad St., Algonquin, Ill.



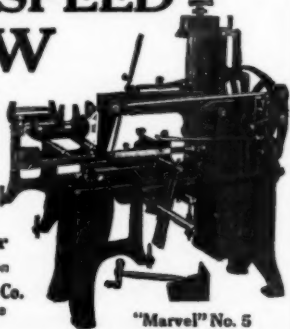
## AUTOMATIC HIGH SPEED SAW

Attention is invited to the "Marvel" No. 5. Cuts duplicate pieces faster and at less cost than any other method. Entirely automatic.

**Feeds the Bar**

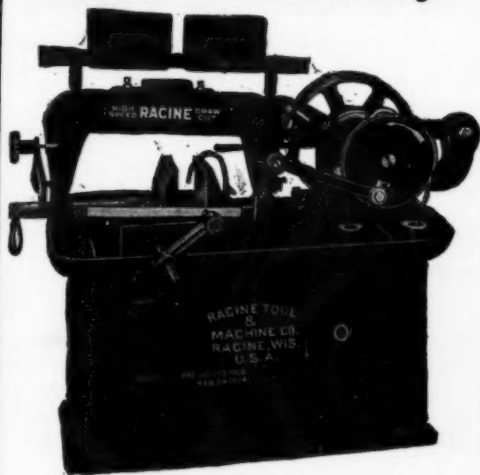
Write for full information

**Armstrong-Blum Mfg. Co.**  
341 N. Francisco Avenue  
Chicago, Ill.



"Marvel" No. 5

## Essential Economy



## The "Racine"

### High Speed Metal Cutting Machine

is in operation in all plants where economy of operation is carefully investigated.

It saves blades, saves material, saves time and labor. 30 different types.

*Catalog "H" will be sent on request.*

**Racine Tool & Machine Co.**

**Racine, Wisconsin, U. S. A.**

## More Cuts per Blade

When buying hack saw blades you are interested in the number of cuts you can get from each blade—you are interested in the cost per cut, not the cost per blade.

### TUNGSTEN STEEL **Liberty HACK SAW BLADES**

That is why Liberty hack saw blades are preferable—you get more cuts per blade—each cut costs you less.

Whatever your cutting problems are, Liberty hack saw blades are the solution. Made from the finest raw material and carefully constructed, each blade represents the greatest number of cuts obtainable.

*Write for catalog and prices*

**Sterling Products Co., Inc.**  
549 Washington Blvd., Chicago, Ill.

## Draw-in and Thrust Chucks

for Tool Room Lathes and Screw Machines. Look for the name "Hardinge Brothers" and write us. And did you ever ask us to make those—

### Screw Machine Collets

with regular or irregular holes? We are prepared to make good deliveries. Why not try us next time? Quantities never too small or too large to interest us.

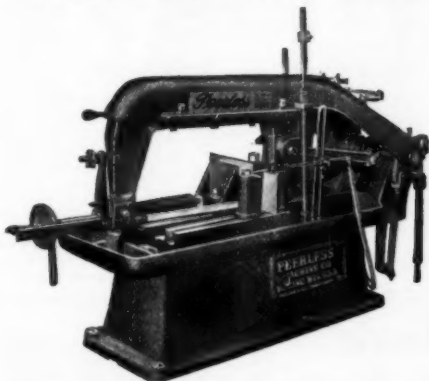
*When making inquiry, kindly refer to "Chuck Department"*

**Hardinge Brothers, Inc.**  
Chicago, Ill.



# *Peerless* **HIGH SPEED**

**Has Proven Its Efficiency  
Where Others Have Failed**



**DON'T** turn down the "Peerless" because you have tried out other hack saws which did not answer your requirements.

Many concerns who were persuaded only with the greatest difficulty to try their first "Peerless," because they "just knew it would turn out like the others," are today among the largest and best-satisfied users of our High-Speed Saws.

The "Peerless" is different—and better. It does 50 to 100 per cent more work, cuts with thinner saws and requires a minimum of attendance, saving time, labor, material, blades and floor space.

*What is your work? We can tell whether the "Peerless" will do it, and back our judgment with a 30-day trial. If it doesn't make good we pay freight both ways. Well?*

**Peerless Machine Company**

**1609 Racine Street,**

**RACINE, WISCONSIN**



No. 24 Press

## Efficient Equipment Atlas Presses

for building and repairing automobiles and general machine shop operations requiring pressure up to 25 tons and centering capacity up to 38 inches.

For driving mandrels; bending and straightening, broaching, embossing with dies, setting bushings and many other every day manufacturing jobs, there is an Atlas Press. All sizes for all purposes. *It will pay you to investigate.*

**Atlas Press Co.**

317 N. Park Street,  
Kalamazoo, Mich., U. S. A.

## Lourie Hydraulic

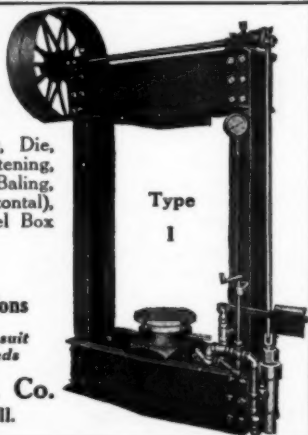
Arbor, Broaching, Die, Bending, Straightening, Forcing, Forming, Baling, (vertical and horizontal), Wheel and Wheel Box

## Presses

10 to 2,000 Tons

*We can build to suit  
your special needs*

**Lourie Mfg. Co.**  
Springfield, Ill.



Type

1

Cap.  
**20**  
Tons



List  
Price  
**85<sup>00</sup>**

## WEAVER Forcing Press

WE ARE SPECIALIZING upon this one size and style of press. It is the ONLY press we make, therefore we are able to produce a better article at less money than were we compelled to carry the overhead necessary to produce a great variety of styles.

5-inch, 9-pound channel steel frame, 32-in. wide, 15-in. hand wheel, carried upon ball bearings. Bronze Thrust Bearings, Screw 2 in. in diameter with 3-pitch Acme thread. Range of movement, 12 in. The screw does not revolve.

List Price (<sup>32-in.</sup>  
Width) \$85.00

**Weaver Manufacturing Co.**

2179 So. 9th Street,

Springfield, Illinois

## The Anderson Ever-Ready Balancing Ways

**Require No Adjusting**



They are unequalled for the easy and accurate balancing of cutter heads, crank shafts, aeroplane motors, propellers, polishing wheels, cones, pulleys, gin brushes, armatures, rotors for turbines, etc.

The rotation discs are made of chilled iron, ground true on face and perfectly balanced. They run in specially designed ball bearings and are extremely sensitive. Several sizes to meet all requirements.

*Description and prices upon request*

**Anderson Bros. Mfg. Co.**  
115 Morgan St., Rockford, Ill.



## T. H. L. Punches

**Of Guaranteed Accuracy,  
Hardness and Uniformity**

Long experience, skill and care have made the name of T. H. Lewthwaite synonymous with punch quality.

You cannot tell how good a punch is by looking at it, and the only safe way is to find the dependable kind by trial and then stick to it.

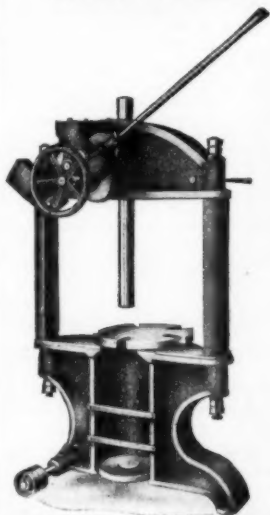
A trial of T. H. L. Guaranteed Punches will make you a permanent customer. We make immediate delivery on all regular sizes and furnish specials on short notice.

*How about a trial order?*

**T. H. Lewthwaite Machine Co.**  
415 East 31st St., New York City

# Get the Latest

## About Greenerd Arbor Presses



They are  
made in all  
sizes and styles  
for  
every purpose  
with  
maximum  
pressures of  
**15 Pounds**  
to  
**40 Tons**

If your shop happens to be one of the few that has'n't some kind of a "Greenerd," it will pay you to get acquainted, for it is an unusual shop indeed that doesn't save time and money by having one or more of these handy tools.

If, however, you are already a satisfied user, it will pay you also to get the facts about the latest developments in "Greenerds." We have improved and developed them and increased their range of usefulness, to make them of greater value to you.

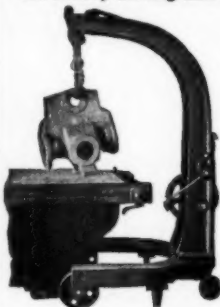
*Ask your dealer or write for complete catalog*

**EDWIN E. BARTLETT,**

**Nashua, N. H.**

## Wanted—A Job

Of Heavy Lifting and Lugging at Bargain Rates



You pay for me only once, and I will work for you years and years without wages.

I will cost you only a fraction of what you pay one man in that time, yet I will do the lifting and lugging of many men.

My name is "The Canton Portable Crane and Hoist," commonly called "The Handiest Tool in the Shop."

For full information about me, write to the Canton Foundry people, whose address is below, for Booklet E-8.

**CANTON FOUNDRY & MCHE. CO., Canton, O.**

## ELECTRIC EUCLID HOISTS

### Let OUR Engineers Save YOUR Time

It is possible that you realize the need of modern material handling equipment but cannot spare the time or men to work out the details.

Our engineers are constantly solving these difficulties and helping manufacturers reduce expenses.

Furthermore, this service is absolutely free.

Will you take advantage of it?

**The Euclid Crane & Hoist Co.**

Dept. C

EUCLID, OHIO, U. S. A.

# HEALD Chuck Proved Absolutely Waterproof



The above shows a 613 chuck submerged continuously in a tank of water for two weeks. A steel ball was attached to a float. When the current was turned on the ball was pulled down to the face of the chuck. Under ordinary magnetic conditions the ball would still cling to the chuck even after the current was turned off—by the Heald demagnetizing switch it could be released at will.

After the chuck was removed from the water it had all its original pulling power, which proves that no water entered the chuck, for if it had the coils would have been short circuited.

*Write for Bulletins No. 371-372*

**THE HEALD**  
**MACHINE COMPANY**  
Worcester, Massachusetts

Your Local Machine Dealer Will Furnish Information and Quotations



*We manufacture a great variety*  
**Lathe Chucks, Drill Chucks, Centering Chucks**  
*Also*  
**Portable Jaws for Lathe face plates and Machine tables.**

*Let us send you our Catalog*

**The Cushman Chuck Co.**  
*Established 1862* **Hartford, Conn.**

## Heavy Duty Universal Joints

**Time Tested and Thoroughly Dependable**



**The "Giant"**

**Efficient to an  
 angle of 45  
 Degrees**

**Vanderbeek  
 Universal  
 Ball Joints  
 for higher  
 angle drives**

Sizes  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1, 1 $\frac{1}{4}$ , 1 $\frac{1}{2}$ , 1 $\frac{3}{4}$ , 2, 2 $\frac{1}{2}$  and 3 in.

Years of hard use show the "Giants" to be thoroughly dependable. They are self-oiling and dirt-proof. Write for full information.

**Ainslie Machine & Tool Works**

Successors to Vanderbeek Tool Works

**HARTFORD, CONN.**



# JACOBS IMPROVED DRILL CHUCKS



## Why

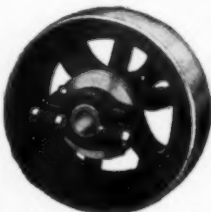
continue using a drill chuck which falls a little short of perfect service, when thousands of drill users the world over have found the "Jacobs Improved" to be the real thing? The fact that it is the drill chuck of widest use attests the thorough satisfaction of its service.

*The Catalog explains; better have one*

**The Jacobs Manufacturing Co.**

Hartford, Conn., U. S. A.

## What Satisfies You? Carroll Clutches



**Self-oiling—double adjustment—  
double gripping power.**

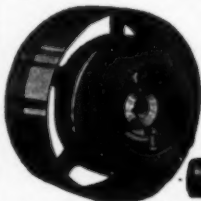
You're satisfied with the clutches you buy at the time you get them or you wouldn't buy. If that's all the satisfaction you want, any clutch will do; they all run good for a while. But if you want satisfaction for many years, day in and day out, you had better have good clutches that need no repairs of any kind; on the job when you need them. That's the sort of clutches we make. We guarantee that kind of satisfaction, or you don't keep them. You decide.

**Used where production counts**

*Let us estimate on your requirements.*

**L. W. Carroll Manufacturing Co.**  
Batavia, Ohio

## The test of the hardest usage by those who are the hardest users



**Enclosed Type, Self-Oiling**

A friction clutch that has stood the test for many years on all kinds of machine tools surely is some clutch. You can put a clutch of that kind up against any proposition with perfect confidence.

### **The Edgemont Friction Clutch**

has been used for years by the leading machine tool builders (names on request) with perfect satisfaction. If there was any better clutch they would have it.

*Write for Catalog of "The Clutch that's stood the test"*

**The Edgemont Machine Co.**  
Dayton, Ohio

**Special Clutches and Transmission Machinery for all purposes.**

# Does Faster Chucking!

Grips as  
delicately  
or as  
firmly  
as  
desired

## The Barker Chuck Can Save You Money

The work is centered automatically and chucked with one movement of the hand lever--could anything be simpler? Not only is it quick, but it is safe and dependable.

It is also highly efficient for bar work, changing from one size to another by a simple adjustment; slight variations require no adjustment.

It increases production of any type of work that can be chucked on turrets, engine lathes or semi-automatics. The economy is obvious.



*Practical  
men  
find our  
Booklet  
interesting  
and  
instructive*

*Send  
for  
your  
copy  
today*

**BARKER CHUCK DIVISION**

**THOMAS ELEVATOR CO., MFRS.**

**31 S. Hoyne Ave., . . . Chicago, U. S. A.**

**Branch: 50 Church St., New York**

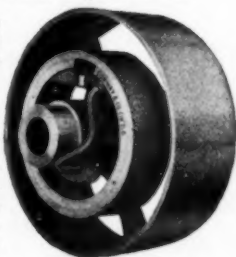
# Conway Friction Clutches

The Result of 20 Years' Improvement

Conway Friction Clutches are *right*. Send for long list of machines on which they are being used.

## CMT Patent Clutch

is our Machine Tool Clutch, which is daily giving unsurpassed service on lathes, shapers, drills, millers, etc. It is composed of only three interchangeable members, and is unusually simple and durable.

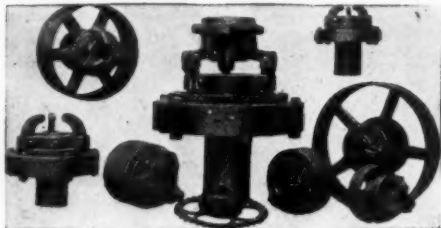


CMT Friction Clutch

Write for Catalog of the Friction Clutch that's *RIGHT*

**CONWAY & COMPANY,** Stock Yards P. O. Cincinnati, O.

**IF YOU DON'T SEE  
YOUR NEEDS, WRITE US**



*Special Clutches—our specialty  
Catalogue cheerfully sent on request.*

**National Clutch Company**  
1859 Fulton St., Chicago, Ill.

# The Sweetland

Lathe Chucks for All Purposes—Independent,  
Universal, Combination, Geared Scroll and Special



Wherever they are used Sweetland Lathe Chucks make friends.

No fear of spoiling the work at the last minute, for *they do stay gripped.* As a customer expresses it, "For taking a quick, firm grip the Sweetland beats all."

And as to *wearing qualities*—we have records showing that Sweetland Chucks which have had *20 to 30 years of hard use* are today giving satisfactory service.

Write for Catalog No. 11-C, so you will have it handy when you need a new lathe chuck

**The Hoggson & Pettis Mfg. Co.**  
New Haven, Conn., U. S. A.

## Gem Drill Vise



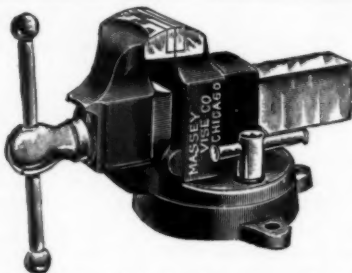
**Strong and Durable**  
**Quick in Action**  
**Powerful Grip**

Made by

**J. E. Martin Tool & Die Co.**

548 West State Street,

Springfield, Ohio



From the standpoint of durability, ease of operation and economy, Massey Vises have no superiors.

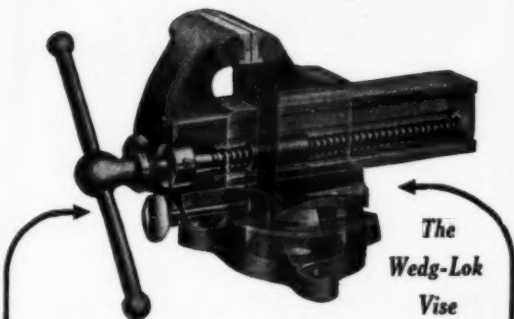
*Write for Catalog No. 18.*

**Massey Vise Company**

549 Washington Blvd.,

Chicago, Ill., U. S. A.

# Put This Vise On Your Pay-Roll



If you found a man who could increase production and decrease costs, wouldn't you put him on the pay-roll? That is exactly what you can do with the WEDG-LOK VISE. Old style vises are too expensive—too much time lost in their operation—takes too long to adjust them.

## The Wedg-Lok Vise

is the speediest vise on the market. Not a second need be wasted in its operation. No matter whether the job is big or small; clumsy or convenient, the Wedg-Lok handles it easily, securely and quickly. If the job needs to be turned—*turn the vise, not the job*—it's easier and quicker. Once a job is locked in the jaws there's no need to remove it until all work is finished in that position. The vise can be turned in a complete circle—accessible at every angle. Entire operation accomplished with one hand. No need to drop work and retard production. One turn of the handle permits adjustment of vise to any desired position.

Simple in construction, positive in operation. No complicated parts to get out of order. All parts standardized—any part easily replaced. Fully guaranteed.

*Write for complete descriptive circular*

**The Jahant Foundry & Heating Co.**  
**207 Steiner Ave., Akron, Ohio**



# Nestor Vise

## Here are its Features:

Work is gripped almost instantaneously—moves from maximum to minimum with quick action sliding jaw.

For size and weight an extraordinary gripping range is provided.

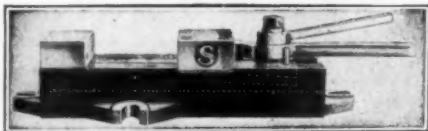
Hole can be drilled at right angles without taking work from vise.

Special provision makes it impossible for jaws to cock up. Immediate delivery.

*Write for particulars, sizes and prices*

**Nestor Manufacturing Co., Inc.**  
40 W. 13th St., New York City

## "Supreme" Quick Action Vise With 10 Superior Features



Patented May 8, 1919

1st: It has a larger range than other vises of the same size.

2nd: All cuts are made against the solid jaw which is set in to the base to insure it remaining parallel with the sliding jaw.

The other eight superior features are of equal value in making the "Supreme" a vise of real supremacy in everything which tends to utility, convenience, strength and simplicity.

*Write for circular describing the 10 Superior Features*

**SPAFFORD TOOL WORKS, - Hartford, Conn.**  
Export Department, 77 Broad St., New York City



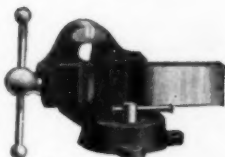
# Yost Vises

**The Favorites of Skilled Mechanics**

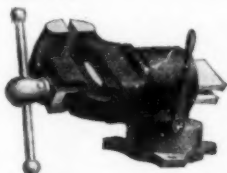


**Solid Jaw, Stationary**

Yost Vises are made for every machine shop purpose. The four here shown are only a part of our complete line, as shown in the illustrated Catalog.



**Solid Jaw, Swivel Base**



**Universal Double Swivel**

The Yost Drill Press Vise replaces special and costly jig fixtures so often necessary in drill press operations. It has "Yost" quality and convenience.



**Yost Drill Press Vise**

*Better have the Catalog on hand for reference*

**Yost Manufacturing Co.**  
**Meadville, Pa.**



Style "C"



The Hinge



Style "Y"



Style "B"



Style "G"



Style "O"



Style "L"



Style "T"

### GITS OIL CUPS

Give perfect satisfaction where others fail. State style and size in which you are interested, and we will send free samples and catalog.

**GITS BROS. MFG. CO.**

1946 SO. KILBOURN AVE., CHICAGO



Style "H"

## Steel Handles

**Ball Crank, Compound Rest, Ball Lever Handles, etc.**

The price is below manufacturing cost of cast or forged handles, and in quality there is no comparison, being accurate, highly finished and ready to attach.

Get our catalog of standard handles, with prices and discounts, and note the many advantages.



**The Cincinnati Ball Crank Co.**

Oakley, Cincinnati, Ohio



**Yearly  
Losses  
in  
Tools  
Saved**

**You can write indelibly on steel**

even when hardened, just as easy as with  
a pencil on paper, by means of

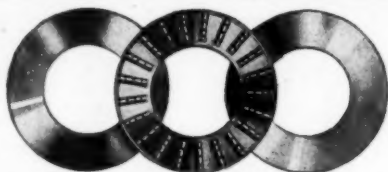
**THE ELECTRO-STYLOGRAPH**

Very useful for permanent marking of tools,  
gages, dies, metallurgical test specimens, etc.

**THE ELECTRO-STYLOGRAPH CO.**

17 MADISON AVENUE,

NEW YORK



# BEARINGS

**LIGHT DUTY**

**HEAVY DUTY**

**ALL TYPES**

**MANY SIZES IN STOCK**

**THE GWILLIAM COMPANY**  
**ENGINEERS**

**253 WEST 58th ST., (at Broadway), NEW YORK**

**Branch, 1314 Arch St., Philadelphia**

## Abbott Steel Bearing Balls

**High Grade—Highly Finished**



**We shall be glad to have your inquiries and make estimates**

**The Abbott Ball Company**  
**Elmwood District, Hartford, Conn.**



# Redface Pulleys

Sheaves and Fly Wheels



**PERMANENT:** They are permanent, as they are not affected by age, heat, cold or moisture.

**RELIABLE:** They do not loosen up under vibration or intermittent loading.

**RUN TRUE:** They run true, steady the line shaft, and have a very small load due to windage.

**REDFACE PULLEYS** are especially adapted to use on motors, fans, pumps and special machinery.

*Catalog mailed promptly upon request*

## **Pyott Foundry Co.**

Cast Iron Pulleys, Sheaves and Fly Wheels  
328 N. Sangamon St., Chicago, Ill.

We have a complete line of  
**CASE HARDENING MATERIALS**

"Hi Carbon" Pack Compound.

"B-G Compound" for Cyanide Hardening.

"Enamelite" for obtaining soft areas.

**BOXES—POTS—OILS—BONE.**

Shore's Scleroscope

In Stock

Prompt Service

*Our complete catalog is waiting*

**Bell & Gossett Co.**

613 W. 30th St.,

Chicago

## **Case-Hardo**

**Non-Poisonous Case Hardening Compound**

**Better—Quicker—Cheaper**

*Better*, because it produces a glass-hard surface, of a good color, with deep penetration.

*Quicker*, because it requires less heat—only about 1400 degrees Fahr. when used in any cyanide furnace.

*Cheaper*, because it saves labor, fuel and time, it costs less, and it hardens more work than an equal weight of any other hardening compound.

*Case Hardo* has been tried and proven by over four years of successful use, and has behind it our reputation of over 30 years.

Manufactured By

**The Thos. Buchanan Company**

29 W. 3rd St.,

Cincinnati, Ohio

Established 1886

The Aircraft Production Bureau now permits us to pass it along for private use



### **Non-Poisonous and Better**

Ferro Case is a carefully prepared, uniform, non-poisonous material, which is so much better than cyanide in safety, comfort, economy and results, that the latter has become ancient history wherever Ferro Case has been thoroughly tested.

### **Made in Two Grades**

Ferro Case M is for use in any style or make of cyanide melting furnace, and is handled in the same manner.

Ferro Case S is sprinkled upon the red hot steel or iron, for which it has no equal, as we would like to show you.

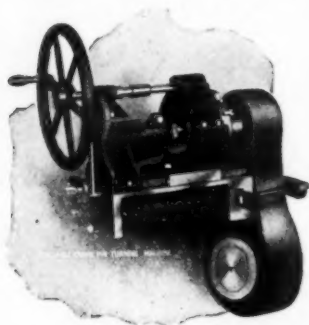
Be sure to specify which grade is wanted. We can now make delivery of either grade in any quantity.

**C. G. Buchanan Chemical Co.**

**Cincinnati, Ohio**

# Crank Pin Turner and Reborer

The Underwood is Made in Four Sizes



**Y**OU WILL FIND this portable tool distinctly superior, both in the accuracy of the work and in the time saved on any particular job. It is especially good in overcoming the difficulties of returning large crank pins.

Four set screws center it true with the pin in the same manner as a lathe chuck. The cutting tools are carried in a patent holder that grips them firmly. Feed is reversible while machine is running, and the work is in plain view of the operator.

Our comprehensive line of time and money saving tools includes the following:

Millers; circular planer tools; radius planers; rotary planers; machines for truing eccentrics, facing domes, arms for facing cylinder flanges; rotary flue cleaners; pipe benders; locomotive cylinder borers; boring bars for lathe work; crank pin turners; reflex water glass grinders; motors, etc.

*Let us send you the interesting Catalog*

**H. B. Underwood Corporation**

1015-25 Hamilton St., Philadelphia, Pa.



## Second-Hand Machinery.

Lists of Second-Hand Machinery, either for sale or wanted, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue. Minimum charge, **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. No display in this department.

**Write directly to those offering the machines for sale** for prices and full descriptions. If what you require is not listed, use the blank enclosed to make known your wants to the publisher.

### FOR SALE BY

**J. L. Osgood,** . . . . . **45 Pearl St., Buffalo, N. Y.**  
 Chucking lathe, 21" Potter & Johnson, \$350.  
 Cylinder grinders, No. 60 Heald, (2).  
 Screw machine, No. 5 Warner & Swasey, \$975.  
 Shell cutting-off machine 14" Williams.  
 Turret lathe, 12" Brown & Sharpe, \$200.

### FOR SALE BY

<b>B. C. Allen Machinery Co.,</b>	<b>104 S. Clinton St., Chicago</b>
Band saw, metal.....	\$ 125.
Blowers, Buffalo Nos. 4 and 6.	
Bolt cutter, 2" solid die.....	90.
Bolt cutter, 1 1/2" Merriam.....	225.
Drill press, 20" lever feed.....	60.
Drill press, 15" \$60 & \$65.....	
Drill press, 20" b. g. p. f.....	125.
Drill press, 22" sliding head.....	120.
Drill press, 26" power feed.....	150.
Drill press, 13" 3-spindle.....	100.
Drill press, 4" radial.....	850.
Emery grinders, Nos. 2, 3 & 4	
Emery grinder, heavy floor.....	200.
Forge, with hood.....	12.
Hack saw, 4"x4".....	16.
Hack saw, Racine high speed	125.
Lathe, 10"x3 1/2".....	110.
Lathe, 18"x 8', plain rest.....	\$ 300.
Lathe, 18"x10', comp. rest.....	350.
Lathe, 15"x10', comp. rest.....	475.
Lathe, 24"x14', q. c. g.....	1000.
Lathe, 26"x16', comp. rest.....	700.
Lathe, 36"x16' Putnam.....	1000.
Lathe, turret, 12".....	125.
Lathe, turret, 16".....	200.
Lathe, 14" Fox.....	200.
Miller, No. 2 Hendey, q. c. g.....	875.
Press, foot.....	35.
Press, No. 2 stationary bed.....	125.
Press, No. 36 Niagara.....	450.
Shaper, 15" crank.....	325.
Shaper, 6" crank.....	125.
Shaper, 24" friction.....	375.
Chucks, belting.....	

### FOR SALE BY

<b>Peninsular Machinery Co.,</b>	<b>281 E. Jefferson Ave., Detroit, Mich.</b>
Drill, 10" Hoefler, friction disc.	
Drill, 20" Rockford, back geared.	
Drill, 23" Rockford, back geared.	
Drill, 24" Rockford, sliding head.	
Drill, 2 1/2" Fossdick radial.	
Drill, Pierle high spd. ball bearing.	
Grinder, 16"x36" Queen City cyl.	
Grinder, No. 1 LeBlond univ. cutter.	
Grinder, No. 2 Grand Rapids, drill and tool.	
Grinder, No. 1 Blount, emery.	
Grinder, No. 6 Blount, d. e. emery.	
Groover, No. 3 Niagara.	
Lathe, 11"x 4' Blount speed.	
Lathe, 14"x 6' LeBlond engine.	
Lathe, 16"x 6' LeBlond engine.	
Lathe, 17"x 8' LeBlond rap. produc.	
Lathe, 17"x10' LeBlond automobile.	
Lathe, 18"x 8' LeBlond engine.	
Lathe, 18"x8' LeBlond engine, quick change gear, motor drive.	
Lathe, 20"x10' LeBlond engine.	
Lathe, 25"x12' LeBlond engine, h. d.	
Lathe, 30"x16' Pond.	
Miller, No. 2 1/2 LeBlond universal.	
Miller, No. 3H LeBlond universal.	
Planer, 24x24"x6' Rockford, agl. hd.	
Planer, 28x28"x8' Rockford, agl. hd.	
Planer, 30"x30"x18, Rockford, 2 hds.	
Planer, 54"x54"x30' Betts heavy pattern, reversing motor drive.	
Shaper, 16" Rockford, back geared.	
Shaper, 20" Rockford, back geared.	

## SECOND-HAND MACHINERY

### FOR SALE BY

Simmons Machine Co., Inc., Albany, N. Y.

1001 Singer Bldg., New York

358 Ellicott Square, Buffalo

804 Dime Savings Bank Bldg., Detroit

#### LATHES.

New 11"x 5' Myers, engine lathes.  
New 14"x 6' Simmons, new type.  
New 16"x 8' Simmons, new type.  
New 16"x 8' Monarch, with oil pan, pump, and piping.  
18"x 6' American complete.  
20"x 8' American heavy duty, swing over bed 22".  
18"x 8' Reed, taper att., complete.  
16"x 8' Lodge & Shipley, q. c. g., 4-step cone, complete.  
18"x 8' Rahn-L., q. c. g., complete.

16"x 8' Greaves-Klusman, c.r., d.b.g., complete.  
21" LeBlond, all grd. hd., hvy. tool.  
24"x 10' Flather, swing over shear 24".  
33"x 8' 6" Fifeild ch'k'g. screw cutting.  
40"x 12', 18', 24', 36" Fifeild, triple grd.  
4"x 48" Marvel, pat. all grd. hd. stock.  
23"x 48"x 6" Putnam ext. bed gap.  
New 60"x 25' Simmons triple geared engine lathe.  
24"x 36" Marvel lathe, complete.

#### PLANERS.

22"x 22"x 54" Wheeler, 1 head.  
36"x 36"x 8' Pond, 2 heads.  
36"x 36"x 12' Bickett, 2 heads.  
36"x 36"x 12' Rockford, 5 heads.  
36"x 36"x 16' Flather, 2 heads.  
38"x 38"x 8' 6" Reliabuilt, 2 heads.

38"x 38"x 12' 6" Reliabuilt, 3 heads.  
New 42"x 42"x 12' openside, 2 heads.  
42"x 42"x 11' Putnam, 2 heads.  
52"-74"x 52"x 24' Betts, extens. 2 hds.  
14' Hilles-Jones plate planer.  
66"x 52"x 13' 6" Reliabuilt, 2 heads.

#### MILLING MACHINES.

New Utility port. milling appliance.  
New No. 14 American plain millers.  
No. 2 Brown-Sharpe univ., vert. att.  
No. 3-H LeBlond univ., all pwr. fds.  
No. 3-B Owen pl., gear fds., complete.

No. 3 Kempamith universal, vertical heads, complete.  
No. 24 Oesterlein plain.  
No. 15 Garvin plain.

#### GRINDERS.

No. 5 Brown-Sharpe universal.  
10"x 20" and 10"x 24" Landis plain.  
Style BX Wilmarth-Morman univ. tool-cutter, drill grinding attach.

New 18" Hoysradt-Case disc.  
New Dumore elect. tool-post, equip. A, B, C.  
New Dumore Junior electric tool.

#### DRILLING MACHINES.

8-spindle Baush, geared hd., belt dr.  
3' Dreses pl. radial, extra pl. box tbl.  
3' 6" Bickford radial, back geared.  
4' 6" Bickford radial, tapping attach.  
5' Baush plain radial complete.  
6' Prentice radial, tapping attach.  
6' Pond pl. radial, arr. for motor dr.  
7' 3" Warren semi-universal radial.  
22" Barnes, sliding hd., tapping att.

24" Aurora, sliding head, complete.  
26" Snyder upright, sliding head.  
26" Rockford drill press.  
28" Garvin upright, adjustable head.  
36" Snyder upright, sliding head.  
38" New Haven, sliding head.  
4-spindle Foote-Burt sensitive.  
New No. 38, 20" Canedy-O., sta. hd.  
New No. 38, 20" Canedy-O., sta. hd.

#### AUTOMATICS AND SCREW MACHINES.

Conradson turret, 34" swing.  
No. 52 & No. 55 National Acme autos.  
13-16" National Acme automatic.  
2" Cleveland model "A", 5-hole tur.  
No. 0 Brown-Sharpe automatic.

New Foster pl. screw machines, No. 2, No. 4, No. 8, No. 9, No. 10.  
3"x 36" Jones-Lamson turret lathe.  
2"x 24" Jones-Lamson turret lathe.  
No. 32 Garvin turret lathe.

#### BORING MILLS.

34" King vert., swing 36", gear feeds.  
56" Bullard vertical, boring-turning.

42" Gisholt vertical, 2 heads.  
48" Niles car wheel borer.

#### SHAPERS AND SLOTTERS.

6" Shaper, traveling head.  
New 17" Simmons single grd. crank.  
20" Cincinnati, high duty, back grd.  
24" Flather heavy duty.  
24" Smith-Mills shaper.

20", 16", 14" Smith-Mills shapers.  
6" Bement-Miles slotter, rotary tbl.  
18" Bement-M. crank slotter, rot. tbl.  
12" New Haven crank slotter.  
12" Niles crank slotter.

#### MISCELLANEOUS.

Brake, 10' Robinson.  
Pipe mch., 3" Jarecki No. 7, with dies.  
Press, No. 46 Bliss straight side, extra heavy frame.  
Press, No. 59 Toledo st. side, dbl. grd.

Press, No. 663 Toledo knuckle joint.  
Presses, new Sidney Nos. 0, 1, 2 and 3 power.  
Punch & shear, sgl end, Rock River.  
Slitting shear, No. 109 Bliss, & table.

## SECOND-HAND MACHINERY

**Simmons Machine Co., Inc.—Continued.**

### WOOD-WORKING MACHINERY.

Band saw, 36" Root, with 5 saws.  
Boring mchs., post, univ. vertical.  
Cornice brake, hand, 6".  
Jointer, 8" American, with c. s.  
Router, New Britain No. 2, chain.

Sander, 30", 3 drum Fay-Egan.  
Saw table, No. 1 American combination, with c. s.  
Shaper, dbl. spindle, No. 2½ American, with c. s.

### FOR SALE BY

**Electric Grinder, Care A. H. Hitchcock, 1220 Caxton Bldg., Chicago**

One new electric driven ball bearing bench grinder, with two 10" diameter 1" face wheels, a. c. motor, 1 h. p., 60 cycle, 1 phase.

### FOR SALE BY

**Farley & Loetscher Mfg. Co.,**

**Dubuque, Iowa**

#### DRILL PRESSES.

16" Hoefler upright drill presses, (2).

#### RIVETING MACHINE.

No. 83 Grant rotary rivet spinning machine, for 3-16" rivets, bench type.

The above machines practically new; used but a few months on Government work.

### FOR SALE BY

**The E. A. Kinsey Co.,**

**Cincinnati, Ohio,**

**Indianapolis, Indiana**

#### DRILLING MACHINES.

20" Hoefler, b. g., p. f., sta. hd.

¾" type BA-1 U. S. Electric, 220 volts, 60 cycle, 3 phase.

¾" type T., U. S. Elect. 220 v., 60 cy. Bausch 4-spindle multiple.

#### GRINDERS.

Grinder, 16x36 Queen City plain.

Grinder, No. 2 Brown & S. univ.

Water tool, 26 in. wheel.

Wesche electric buffing, a. c. motor.

#### LATHES.

16"x 8' Seneca Falls, q. c.

18"x 8' Rockford, q. c.

19"x10' Greaves-K., c. r., s. & f. r.

30"x20' Harrington, s. b. g.

#### PLANERS.

33"x32"x8' New Haven.

18' Niles-B.-P. plate, ¾" steel plate.

54-54x30 H. P. Betts; rev. d. c. motor.

24"x30"x8' Gray, 1 head, (2).

26"x30"x8' Ohio, 1 head.

#### TURRET AND SCREW MACHINES.

No. 1 Am. Tool & M. Co., sq. ar., s. b. g., 4 s. c.

20" No. 7 Bardons & O., g. fr. hd.

No. 4 Brown & Sharpe, w. fd., (7).

3x36 Jones & Lamson flat turret.

No. 2 Warner & Swasey, (2).

#### MILLING MACHINES.

Milling mche., No. 1 B. & S. univ., spiral head centers.

Milling and drilling machine No. 2 Knight.

48" Newton plain.

No. 3 Cincinnati plain.

Newton 21"x6' slab miller.

No. 13 Brown & Sharpe plain.

#### MISCELLANEOUS.

Abrasive metal cutter, 12" Peters.

Band saw, 36" Towsley, with motor.

Bolt cutter, 2½" Acme, dbl. spindle.

Centering att., Carroll No. 2, cap. to 2".

Chain machine, Cross & Spiers.

Chuck, 12" universal.

Cutting-off mch., 3" Hurlbut-Rogers.

Gas furnace, No. 93 Stewart dbl. end.

Gear hobber, 18" Gould & Eberhardt.

Gear hobber, No. 3 Farwell.

Oil pump, Trahern No. 1 F. rotary.

Profiler, Pratt & W. No. 12, belt.

Riveter, 2-16" Schuster, on ped.

Saw bench, Beach, table 36x54".

Screw mche., No. 2 Brown & Sharpe automatic.

Special internal grinding fixture

Brown & S., for No. 1 universal.

Tapping machine, Garvin No. 1.

Vise, flanged, Brown & Sharpe No. 4.

## SECOND-HAND MACHINERY

### FOR SALE BY

**Harris Brothers Company, 35th & Iron Sts., Chicago, Ill.**

#### ENGINE LATHES.

Screw-cutting quick change mechanism, 3-step cone, dbl. bk. grd., comp. rests:  
 18"x 6' Ryerson, (4). | 18"x 8' Sidney, (2).  
 18"x 8' Mueller. | 20"x 10' Canada Machy. Corp., (5).  
 With turrets on carriage without compound rests:  
 18"x 6' Canada Machy. Corp., (2). | 20"x 8' McDougall, (3).  
 With loose change gears, 3-step cones, dbl. back grd., and compound rests:  
 18"x 8' Sidney, (3). | 18"x 8' Milwaukee, (6).  
 With loose change gears, compound rests, single back geared:  
 15"x 6' Rockford Tool Co., (5). | 16"x 8' P. P. Silk, (3).  
 15"x 8' Williams. | 18"x 10' McDougall.  
 18"x 6' Cincinnati. | 21"x 7' Bertram.  
 18"x 8' Barker, (4). | 22"x 10' Bradford.  
 18"x 6' Giddings & Lewis, (4).  
 Plain turning lathes with plain rests. (Not screw cutting):  
 16"x 6' Rockford, pan bed, (10). | 20"x 8' Simplex, (4).  
 With turret on carriage but without plain rest:  
 18"x 8' Milwaukee, (10).  
 All the above lathes have hollow spindles and countershafts.

#### DRILL PRESSES.

Colburn 25" swing, heavy duty, high speed, No. 5 Morse taper, single pulley drive, (9). | Barr 2-spindle 14" sensitive, cap.  $\frac{1}{2}$ ".  
 Brown & Sharpe 36" vertical boring mill, with tur. hd. and chuck jaws.

#### GRINDERS.

Greenfield cutter and tool. | Yankee twist drill grinder.  
 Wells Bros. cutter and reamer. | No. 1 Fraser universal cylindrical  
 Surface grinder, table 19x54" with 8" swing, 28" centers.  
 magnetic chuck 14"x8". | Ford Smith cylindrical grinders, (2).

#### TURRET LATHES.

Jones & L. 3"x36" bar outfit, (3). | W. P. Davis 24" swing set over turret, all power feeds, (2).  
 Warner & Swasey No. 4, 16" swing.

#### MILLING MACHINES.

Rockford No. 1 plain table, 38"x9".  
 Ford-Smith No. 2 plain table, 46"x10".  
 No. 6, 48" swing vertical Becker, latest type, improved standard miller, all power feeds, longitudinal 62"; transverse 20"; vertical 20"; power down feed to spindle head, 12" power feed to rotary.

#### HACK SAWS.

Racine high speed, 6" capacity. | Peerless high speed, 6"x6".

#### PUNCH PRESSES.

Williams straight sided, b. grd., sgl. action punch press, 22" between uprights.

#### TESTING MACHINES.

Pittsburgh Brinnell style A, with | Tinius Olsen tensile testing machine,  
 controlling weights. | 4-screw type.

#### HAMMERS.

Mayer Brothers 250 lb. trip hammer. | Board lift drop hammers, 2000 lb., (2).  
 Board lift drop hammers, 1000 lb., (2).

#### PUNCHES AND SHEARS.

Long & Allstatter combination shear and beveling mche., wt. about 25,000 lb.  
 Alligator shear for 14"  
 Wiener steel plate "I" beam shear for 15" "I" beam.  
 Thompson bevel cutting shear,  $\frac{1}{2}$ " plate.  
 Hilles & Jones sgl. end punch, 12" throat, architectural jaw, cap.  $\frac{1}{4}$ " thru  $\frac{1}{2}$ ".  
 Hilles & Jones 20" throat, single end punch, cap.  $\frac{1}{4}$  through  $\frac{1}{2}$ ".

#### TRAVELING CRANE.

Niles electric traveling crane, 46' span, 15 ton cap., with auxiliary hoist, 5 ton, 4 motor type, 220 d. c.

Our complete Machinery Bulletin sent upon request.

## SECOND-HAND MACHINERY

### FOR SALE BY

**Stocker-Rumely-Wachs Co., 117-121 N. Jefferson St., Chicago**

In stock for immediate delivery.

#### BORING MILLS.

- 24" Industrial Works horizontal boring mill.
- 60" Bullard, with two swivel heads.
- 72" Bullard, with two swivel heads.
- 100" Canadian Machinery Corporation, with two swivel heads.

#### DRILLING MACHINES.

- Rockford bench drill.
- 14" Washburn sensitive.
- 14" Rockford sensitive.
- 16" Cincinnati.
- 24" Fosdick radial.
- 5' Fosdick radial.
- 6' Gang radial.
- No. 9 Prentice Bros. radial drill, 6' arm.
- 14" Woodward & Rogers, 4-spindles.

#### GEAR CUTTERS.

- No. 2 Standard gear cutter.
- 30"x8' Gould & Eberhardt gear cutter for spur gears.
- No. 3 Farwell hobber.

#### GRINDERS.

- No. 12 Brown & Sharpe universal tool grinder.
- No. 1 Cincinnati universal tool and cutter grinder.
- No. 6 Modern, internal grinder.

#### LATHES.

- 18"x 6' Bradford, compound rest.
- 18"x 8' Rockford, compound rest, quick change gears.
- 24"x12' Schumacher & Boye, compound rest.
- 32"x18' Bradford, compound rest.
- 37"x18' Fifield, compound rest.

#### MILLING MACHINES.

- No. 2 LeBlond plain milling machine.
- No. 15 Garvin plain, with vertical spindle attachment.
- No. 5 Becker vertical milling machine.

#### PUNCHES AND PRESSES.

- No. 544 Perkins sprue cutter.
- No. 2-P American Can.
- No. 16 Bliss, horn press.
- No. 2-A Bliss double crank geared press, 10" stroke.
- No. 205-H Toledo crank geared press, new, gap pattern, 96" bet. housings.
- No. 3 Ryerson geared punch, 4"x4".
- No. 7 Massillon single end punch and shear, 36" throat, arch. jaws, capacity 1 1/4" thru 1", new.

#### SCREW MACHINES.

- No. 1 Bardons & Oliver, plain head, a. c. & w. f.
- No. 2 Warner & Swasey, plain head, a. c. & w. f.
- No. 2 Foster, plain head, a. c. & w. f.
- No. 4 Warner & Swasey universal, a. c. & w. f.
- No. 6 Warner & Swasey, geared friction head, a. c. & w. f., power feed to turret slide.
- No. 6 Foster, friction a. c. & w. f., power feed to turret.
- No. 9 Bardons & Oliver geared friction head, a. c. & w. f., power feed to turret and cut-off slides.
- No. 2-G Brown & Sharpe automatic.

#### MISCELLANEOUS.

- Shaper, 16" Baker, vertical.
- Slotter, Canadian Machinery Corporation, good as new.
- Tapping machine, No. 2 Garvin.

## SECOND-HAND MACHINERY

### FOR SALE BY

Dale-Brewster Machinery Co., Inc.,

541-7 W. Washington Blvd., Chicago; 54-60 Lafayette St., New York

In Stock at Chicago and New York

### NEW MACHINES.

#### LATHES.

- |                                   |                                      |
|-----------------------------------|--------------------------------------|
| 26"x12' Wickes, q. c. g.          | 14"x 6, Davis, q. c. g.              |
| 24"x13' Chard, q. c. g., (2).     | 14"x 6' Amtew, d. b. g.              |
| 24"x10' Advance, q. c. g.         | 13"x 6' Lancaster.                   |
| 20"x11' Chard, q. c. g., (2).     | 12"x 4' 6" Cleveland precision, (3). |
| 20"x 9' Chard, q. c. g.           | 12"x 5' 6" Davis tool room, (4).     |
| 18"x 9' Chard, q. c. g. (5).      | 12"x 4' 3" Shepard.                  |
| 18"x 8' Advance, q. c. g.         | 11"x 8' Cleveland, "Stellar", (2).   |
| 18"x 8' Cisco, q. c. g.           | 11"x 5' Hudson.                      |
| 16"x 9' Chard, q. c. g.           | 11"x 4' Wells, speed.                |
| 16"x 8' Cleveland, tool room.     | 4"x 5' Elgin precision bench.        |
| 16"x 7' Chard, q. c. g.           | 6"x30" Dalton bench lathe.           |
| 16"x 6' Cleveland tool room, (3). | No. 5½ Sloan & Chase. bench.         |

#### DRILLING MACHINES.

- |                                  |   |
|----------------------------------|---|
| 4½' Morris radial.               | 23" Snyder stationary head, (8).          |
| 3½' Canedy-Otto radial, (3).     | 22½" Cleveland upright, (5).              |
| 3' Western radial.               | 21" Cleveland upright, (9).               |
| 36" Snyder traveling head.       | 20" Canedy-Otto, upright, (8).            |
| 32" Cleveland sliding head, (3). | Nos. 1, 2 & 3 spdl. Detroit, h. s., b. b. |
| 30" Snyder traveling head.       | Nos. 1, 2 & 3 spdl. Demco, h. s., b. b.   |
| 28" Cleveland sliding head, (3). | 2 spindle Cleveland, h. s., b. b.         |
| 25" Snyder, with tapping attach. | Demco, h. s., b. b., bench.               |
| 23" Snyder traveling head.       | Plain bearing bench.                      |
| 23" Cleveland sliding head.      | Portable electric.                        |
| 23" Silver sliding head.         |   |

#### MILLING MACHINES.

- |                                 |                                      |
|---------------------------------|--------------------------------------|
| No. 2 Cleveland universal, (4). | Nos. 1-A, 1-B and 0-B Fox plain.     |
| No. 2 Cleveland, plain, (3).    | No. 0 Steptoe hand miller.           |
| No. 2-A Fox universal, (4).     | No. 1 U. S. hand miller.             |
| No. 2-B Fox plain, (3).         | No. 3 Becker standard vertical, (2). |

#### GRINDERS.

- |                                  |                                |
|----------------------------------|--------------------------------|
| No. 3 Modern universal, (2).     | No. 1 Norton cutter and tool.  |
| No. 3 Wilmarth & Morman surface. | No. 2 Norton cutter and tool.  |
| No. 2 Reid surface.              | Grand Rapids drill—all sizes.  |
| Hartford improved surface.       | Yankee drill—various sizes.    |
| 24" Milwaukee wet tool.          | Partridge floor—various sizes. |
| Cleveland profile.               | 3x18 Ott plain.                |

#### MISCELLANEOUS.

- |                                   |                              |
|-----------------------------------|------------------------------|
| Arbor presses, Atlas, all sizes.  | Punch press, No. 1 Rockford. |
| Band saw, 10x10 Napier.           | Punch press, No. 4 Rockford. |
| Filing machine, Nos. 2 & 3 Barry. | Shapers, 16" Barker, (3).    |
| Gear hobbers, No. 3 Farwell, (2). | Shaper, 18" Barker.          |
| Hack saws, Peerless all sizes.    | Shaper, 20" Walcott.         |
| Planer, 36x30x8' Gorton.          | Shaper, 20" Mattison.        |
| Punch press, style B Rockford.    | Shapers, 24" Barker, (3).    |

### USED MISCELLANEOUS.

- |                             |                             |
|-----------------------------|-----------------------------|
| Cold saw, 6x6 Higley.       | Punch press, No. 5 Niagara. |
| Drill, 26" Lodge & Davis.   | Shaper, 20" Rockford.       |
| Hack saw, Atkins Kwick Kut. | Turret lathe, 24" Steidle.  |

## SECOND-HAND MACHINERY

### FOR SALE BY

McCoy-Brandt Machinery Company

Office and Warehouse, 210-218 Penn Ave., Pittsburgh, Pa.

#### BOLT CUTTERS.

- |  |                                       |
|--|---------------------------------------|
| 1 1/2" Acme, double-head, with motor.  | Nut tapper, 2-spd. Acme, 1 1/2", pan. |
| 1 1/2" Acme, dble.-hd., oil pump, pan. |                                       |

#### DRILLING MACHINES.

- |                                     |   |
|-------------------------------------|---|
| Multiple 8-spindle Foote-Burt.      | 24" Barnes, plain, sliding head.          |
| 20" Baker heavy duty, power feed.   | 24" Cincinnati, pwr fd., sliding hd.      |
| 24" Colburn hvy. duty, No. 4 Morse. | 28" bk. grd., pwr. fd., sp. 1-3/16" hole. |

#### LATHES—TURRET.

- |  |   |
|--|---|
| 3x36" J. & L., chucking equipment.                   | 3x36" J. & L., bar equipment.                           |
| 2 1/2" Garvin, 6-hole hexagon turret, 12" box chuck. | B. & S. 1 1/2" h.s., 7-hole round turret, 9" box chuck. |

#### GRINDERS.

- |                                    |  |
|------------------------------------|--|
| 126" Bridgeport, cupwheel, knife.  | Bath univ. tool & cutter, 14x40".      |
| B. & S. plain, 12x12", auto. feed. | No. 13 B. & S. univ. & tool, auto. fd. |

#### MILLING MACHINES.

- |  |                                  |
|--|----------------------------------|
| No. 1 B. & S. plain, hand feed.                        | No. 3 Cincinnati plain, q. c. g. |
| No. 3 B. & S. universal, 12" index head, table 10x50". | No. 2 Cleveland, universal.      |

#### LATHES.

- |   |   |
|---|---|
| 48" Niles car wheel turning, journal attachment, m. d.                  | 16" x 6' Prentice, h. s., c. r., 12" 4-jaw chuck.   |
| 42" x 20' Niles boring lathe.   | 16" x 6' R. M. & C., h. s., c. r., 12" 4-jaw chuck. |
| 24" x 15' Fifeild, solid spdl., pln. rest.                              | 16" x 6' LeBlond, h. s., c. r., 12" 4-jaw chuck.    |
| 24" x 12' S. B. & E., 5" raising blocks, h. s., c. r., 18" 4-jaw chuck. | Speed lathes, 17", 15", 13"—4' bed.                 |
| 18" x 8' Rockford, q. c. g., h. s., c. r.                               |   |

#### MOTORS AND GENERATORS.

- |   |  |
|---|--|
| 30 & 20 h. p., 3-60-220 v.                  | 7 1/2 h.p. Triumph, 220 v., d.c., elev. duty |
| 10 h. p. Fairbanks, 2-60-440 v.             | 15 h. p. G. E., 560 v., d. c.                |
| 1 h. p., 2-60—220 v., 1800 rev.             | 90 k. v. a. Lincoln, 3-60-220 v.             |
| 10 & 4 1/2 h. p., series wd., 220 v., d. c. |  |

#### PRESSES AND BRAKES.

- |  |  |
|--|--|
| Perkins punch, 2" stroke, 4,500 lbs.       | 13' 6" Garrison brake or press, cap. 1 1/2", weight 118,000 lbs. |
| No. 4 Stiles, 1 1/2" str., 5,000 lbs., pl. | 8' Robinson toggle press.  |
| Punch press, Bliss geared, 8,500 lbs.      |  |
| Consolidated, geared, 4" stroke.           |  |

#### PUMPS.

- |  |                                     |
|--|-------------------------------------|
| 3 1/2" x 24" Deane deep well, 25 g. p. m. for motor drive. | 3 1/2" x 10" Deane triplex, belted. |
|  | 7x5x10" Hall, duplex, steam.        |

#### PUNCHES, SHEARS AND ROLLS.

- |  |   |
|--|---|
| 48" throat Reade, cap. 1 1/2" thru 1 1/2".                           | 50" thrt., sgl., cap. 1 1/2" Cincinnati.                          |
| 38" throat Whitney, cap. 1" thru 1".                                 | Guillotine shear, No. 5 Cleveland, 3" stroke, capacity 2 1/2" sq. |
| 15" throat, sgle., cap. 1 1/2" arch jaw.                             | Guillotine shear, Cleveland, 3" stroke, capacity, 2" square.      |
| 15" throat, double, capacity 1 1/2" x 1", Williams-White No. 13.     | Slitting shear, rotary, 23" throat, capacity 1", Newbold.         |
| 14" throat, double, capacity 2 1/2" x 1 1/2", No. 11 Williams-White. | Bevel shear, Thompson, rated cap. 1 1/2".                         |
| Guillotine shear, No. 3 Wilder, cap. 1, 1 1/2" stroke.               | Squaring shear, 108", capacity 1 1/2".                            |
| Guillotine shear, No. 3 Cleveland, 3 1/2" stroke, capacity 2" sq.    | Squaring shear, 26" pwr., cap. 16 ga.                             |
|  | Rolls, 10' Bertsch, cap. 14" gauge.                               |

#### SHAPERS AND PLANERS.

- |                                     |  |
|-------------------------------------|--|
| 24" Cincinnati, crank, b. g., vise. | 24" x 24" x 6' American, 1 head.       |
| 24" Queen City, crank, b. g., vise. | 20" Cincinnati, crank, d. b. g., vise. |
| 30" x 30" x 8' Gray, 1 head.        |  |

#### STEAM HAMMERS.

- |                                     |                                       |
|-------------------------------------|---------------------------------------|
| 1000 lb. N.-B.-P. dble. frame, (4). | 700 lb. Pittsburgh, dble. frame, (3). |
| 700 lb. N.-B.-P. dble. frame, (6).  | 600 lb. Morgan, double frame, (7).    |

#### MISCELLANEOUS.

- |   |                                     |
|---|-------------------------------------|
| Bor'g mill, No. 1 Sellers hor., 2 1/2" bar. | Pipe machine., 12" Curtis & Curtis. |
| Compressors, 9x5x10" Westinghouse.          | Riveter, 1/2" Shuster.              |
| Pipe machine, 8" E. C. & B., dies.          | Seamer, 30" dbl. P. S. & W., hand.  |

## SECOND-HAND MACHINERY

### FOR SALE BY

**Cyril J. Bath & Co.,**

**721 St. Clair Ave., N. E., Cleveland, O.**

Selections from Stock

#### AUTOMATICS.

2" to 6" Model A Cleveland automatics in very good condition with large equipment, at reasonable prices.

No. 33 New Britain auto. chucking machines, five stations and tapping spindle, handle work up to 2½" diameter in chuck jaws and 5½" swing outside chucks, very good, (3).

#### BAR STOCK MACHINES.

Nos. 4 and 6 Warner & Swasey hexagon turret screw machines, large equipment, late model, excellent condition.

4½"x30" Bardons & Oliver, with all geared head, motor driven, with motor, capacity up to 4 13-16" stock, large equipment; excellent condition.

#### BOLT CUTTER.

1½" Landis bolt cutter, one set of dies, good as new.

#### BORING MILLS.

30" Gisholt, single pulley drive, rapid traverse, 3-jaw chuck, good as new.

42" Niles vertical one swivel, one turret head, 3-jaw chuck, good condition.

#### DRILLING MACHINES.

2-spindle 14" Henry & Wright sensitive ball bearing drill, table 17"x12"

No. 11 Natco 8-spindle multiple drill, can be used with 10 spindles; max. drilling area 12"x12"; min. 4"x4", belt feed, fine shape.

20", 22½", 24" and 28" Sibley new. Also two 20" Sibley second hand.

20" Barnes drills, back geared, power feed, (4).

Sibley & Ware drill presses, (3).

22" Rockford drill press.

24" Hoefer upright, sliding head, back gears, power feed and automatic stop.

Large Colburn D-6 hi-speed drills, (4).

#### GEAR CUTTER.

26" No. 3 Brown & Sharpe plain, with all parts, very good condition.

#### GRINDERS.

Wet and dry Yankee drill grinders.

No. 3 Landis universal grinder, takes 12"x42"

18" Bryant internal grinder, late model, excellent condition.

#### HAMMER.

No. 6-B Nazel air forging hammer, weighs 32,000 lbs., practically good as new.

#### LATHES.

8x60 Lo-awing lathes with one 24" tool carriage, standard machine with geared head, good as new, (2).

19" LeBlond, steady and follow rests, countershaft, etc.

18"x8" Mueller engine lathes, q. c. gr., dbl. bk. grd., very good condition.

16" Walcott engine lathes, quick change gear, countershaft, etc., (2).

24"x11" Johnson compound rest engine lathe, in very good condition, complete with standard equipment.

24" Steidle turret lathes, latest model, fine shape.

#### MILLING MACHINES.

Billings & Spencer die trimming miller (improved), first class condition.

No. 00 Brown & Sharpe plain hand miller.

No. 25 Becker plain horizontal miller, almost new.

No. 3-B heavy Brown & Sharpe hi-power; fine shape.

No. 4 Brown & Sharpe cone type with dividing lds., vert. att., etc., very good.

AB1 Becker high power vert. fully equipped with oil pump and countershaft. Becker universal miller, with dividing heads, vise, countershaft, etc.

#### PLANERS.

24"x24"x6' Pease planer with one belt on each side, quick return to table, in first class operating condition.

36"x36"x14" Pond single head planer, in good condition, with table 6" thick, no broken T slots or pegged gears, a good rugged tool, fine condition.

#### PRESSES.

2¼A Bliss toggle drawing press, 30" between uprights, very good condition.

No. 59½ Toledo tie rod frame press, extra heavy, with 12" stroke.

No. 78½ Bliss straight side press, tie rod frame with bolster plates, knock-out rods, etc.



## SECOND-HAND MACHINERY

Cyril J. Bath & Co.—Continued.

### SAWS.

Metal band saws, (2).

Peerless hi-speed 6", new, (3).

### SHEAR.

3" Cleveland bar shear, good condition, weighs about 40,000 lbs.

### MISCELLANEOUS.

No. 0 Ajax return roller, very good.

## FOR SALE BY

C. M. Thompson Co.,

35 S. Clinton St., Chicago

### REBUILT TOOLS.

Drill press, 20" Barnes Camel Back, all geared, used.

Drills, motor driven bench and sensitive floor, new and used.

Lathe, 26x16'.

Planer, 27x8'.

Turret lathes, 2" and 3" Jones & Lamson.

### NEW TOOLS.

Drill, 20" Champion.

Drill, 20" Champion, power feed and back geared.

Grinders, hack saws, hack saw blades, and other equipment.

## FOR SALE BY

Herman L. Winterer,

943-53 N. Front St., Philadelphia, Pa.

### LATHES.

38-48"x14' Box gap extension.

31"x14' Niles.

25½"x26' Johnson.

26"x14' American, d. b. g., q. c. g.

21"x10' Fitchburg.

20"x16' Putnam.

20"x8' 6" Walcott, d. b. g., q. c. g. (3).

And many others.

### TURRET LATHES.

22" Gisholt.

3"x36" Jones & Lamson, (2).

7"x14" Potter & J. semi-auto., (2).

And many others.

### DRILL PRESSES.

6' Dreses radial.

5' Newton radial.

40" Barnes horizontal radials, (2).

36" Bickford radials, circular base, table, motor driven, (2).

30" Dreses radial.

25" Weigel.

20" Baker, (5).

Plain drills, all sizes.

Drill presses, assorted sizes, (21).

### MILLING MACHINES.

36"x8' Ingersoll horizontal.

25"x6' Garvin No. 15 slab, q. c. g., (2).

No. 6 Becker vertical.

No. 3 Becker vertical.

No. 3H LeBlond univ., heavy duty.

No. 3 Hender-Norton.

No. 3 Brown & Sharpe.

No. 2A Kempsmith.

Newton universal, table 50"x8".

Newton plain, table 42"x8".

No. 3 Garvin hand, horizontal.

Whitney hand.

And many others.

### MISCELLANEOUS.

Boring mill, 38" Beaman & Smith.

Boring mill, 34" Gisholt, vertical.

Boring mill, 34" Newton car wheel.

Grinder, disc, No. 17 Besly.

Grinder, 12"x5' B. & S. No. 14 plain.

Grinder, tool room, Heald univ.

Grinder, roll, 54"x10½" Diamond.

Punch presses, all sizes.

Saws, 6" Newton, cold, (2).

### BOILERMAKERS' AND SHIP MACHINERY.

Flanging press, 100-150 ton, capacity.

Hammer, steam, Dudgeon, 1500 lbs. capacity.

Punch, 43" gap Perkins, 1½"x1½".

Riveter, 8½" Wood hydraulic.

Shear, 24" Hans Kraut, beam, channel and angle, capacity 3"-24".

Large assortment of General Machinery.

Send for complete list.

## SECOND-HAND MACHINERY

### FOR SALE BY

**Frank H. Parker Company, First Nat'l Bank Bldg., Chicago, Ill.**  
**Machinery Merchants—Two Phones, Randolph 886 & 925**

Bolt cutter, Nat'l., 2 hds. 1½".....	700.	Lathe, 20"x10", brand new, qk. change gears.....	\$ 1200.
Bor. mill, 62" Niles vert. 2 hds.....	5000.	Lathe, 7" bench, Springfield.....	200.
Bending roll, Bertsch ½"x10".....	1500.	Lathe, 20" Hendey, q. c. g.....	1500.
Chain tackle, 6 ton V & T. trip.....	150.	Milling mch., No. 3 pl. Cinc.....	1250.
Drill press, 28" b. g., s. h.....	300.	Planer, 48"x48"x30".....	3000.
Drill press, Baush, 24 spdl.....	6000.	Punch press, Consolidated No. 104, b. g.....	800.
Engine, 25 h. p. Atlas, steam.....	125.	Punch pr., Walsh No. 5½, b.g.....	800.
Elevator, freight, 2 t., 10"x10", electric.....	2000.	Screw machine, No. 3 Foster.....	450.
Lathe, 16"x 8" Walcott.....	400.	Screw machine, No. 5 Foster.....	800.
Lathe, 18"x 6" New Haven.....	400.	Shaper, 16" Steptoe, friction.....	200.
Lathe, 48"x14, 9" centers.....	1000.	Slotter, Niles, 36" geared.....	5000.
Lathe, 50"x14" New Haven.....	1500.	Speed lathe, 14".....	75.
Lathe, 42"x20" New Haven, quick change gears.....	5000.	Tire setter, West No. 3.....	1000.
Lathe, 20"x 8" Amer., q. c. g.....	800.	Tumbling barrel, 18"x48".....	25.

### FOR SALE BY

**The Osborne & Sexton Machinery Co., Columbus, Ohio**

#### LATHES.

9" to 13" Barnes, h. s., cp. r., new.	18"x 8' Monarch, q. c. taper.
13-15-16 and 18 O. & S., h.s., c.r., new.	19"x12' Gray, compound rest.
13"x 5' LeBlond, hollow spindle.	20"x10' Hamilton, double back gear.
16x6 Seneca Falls rel. att., q. c.	21"x10' and 24"x12' South Bend.
18"x 8' Fitchburg, hol. spdl., cp. r.	25"x24' Fifeild.

#### TURRET LATHES AND SCREW MACHINES.

1" Garvin hand screw machine.	No. 6 W. & S. screw machine.
1½" S. & K. hand screw mches., (3).	2x24 & 3x36 J. & L., dbl. equipment.
1½" Tilted turret hand screw mche.	¾" Hartford single spindle auto.

#### SHAPERS AND PLANERS.

14" Niles, traveling head.	22"x22"x 6' Gray, 1 head.
16, 18 & 24" Barker, back gear crank.	24"x24"x 8' American, 1 head.
16" Kelly crank, back geared.	32"x32"x10" Niles, single head.
20" Rockford back geared, crank.	36"x36"x16" Niles, double head.
20" Walcott geared shaper.	60"x60"x17" Betts, double head.

#### PRESSES.

No. 1 Consolidated and Toledo, (10).	Pneumatic, 20 ton, 37" bet. uprights.
No. 19½ Bliss, 1850 lbs., o. b. i.	Perkins, dbl. crank, 16x24 bolster.
No. 2 Sidney o. b. inclinable, 1600 lb.	Bliss, 42,000 lbs. toggle drawing.
No. 32 Toledo geared.	Covington, 10' 6" between housing.

#### DRILLS AND RADIALS.

Henry & Wright sgl. spdl., high spd.	Sensitive 1, 2 & 3 spindle.
8-spindle, gang, adjustable centers.	High speed sgl. spdl. Cleveland.
3½ Canedy-Otto plain, new.	20" Aurora, with tap. attachment.
4" Baush plain, heavy pattern.	24", 26" and 28" sliding head.
4½ Universal, cone drive.	Quint 6-hole turret drill.

#### MILLING MACHINES.

No. 12 Brown & Sharpe, (2).	No. 1½ American plain.
No. 1½ Valley City universal.	No. 1½ Valley City plain, new.
No. 4 Cincinnati plain.	No. 3 Brainard, 30x7 table.

#### GRINDERS.

No. 3 W. & M. wet surface.	30x10 Webster & Perks, univ., new.
Landis 10x24 universal.	Cutter, reamer and tool, new.
Litter 10x20 universal.	Cincinnati cutter and tool.

#### MISCELLANEOUS.

Balancing machine for pulleys.	Hammer, 55 Williams White Justice.
Band saws, metal, 30" Wright, (2).	Motor, 7½ h. p., 220 volt, 3 phase.
Boring mill, 12" 2 swivel heads.	Pipe machines, 4, 6 and 12".
Boring mill, 32" Baush, turret head.	Plate shear, 10' for ½" plate.
Compressor, 8"x3" H. & B. belt.	Punch & shear, No. 3A Royersford, double end.
Cut-off machine, 3" Davis.	Straightening rolls, 57" for ½ plate.
Dynamo, plating, 2500 amp., 8 volt.	

## SECOND-HAND MACHINERY

### FOR SALE BY

**Niles-Bement-Pond Company, 111 Broadway, New York**  
**Located at our various factories and stores.**

#### LATHES.

- |                                  |  |
|----------------------------------|--|
| 12"x 5' Robbins, draw-in attach. | 18"x 8' Davis, q. c., raising b. cks to swing 24"  |
| 14"x 6' Bradford, c. r.          | 18"x 10' Schumacher, B. & E., quick change, taper. |
| 14"x 6' Whitcomb, taper, pan.    | 21"x 8' LeBlond, grd. hd., hvy. duty.              |
| 14"x 6' LeBlond, geared head.    | 21"x 8' Bradford, c. r.                            |
| 15"x 7' P. & W. speed lathe.     | 21"x 10' Bradford, c. r.                           |
| 16"x 6' Reed, r. & f. rest.      | 22"x 8' Niles, c. r.                               |
| 16"x 8' Bradford, c. r.          | 30"x 14' Niles, c. r.                              |
| 16"x 8' Von Wyck, quick change.  | 30"x 16' Pond, quick change.                       |
| 18"x 6' Prentice.                |  |
| 18"x 8' LeBlond, quick change.   |  |

#### TURRET LATHES.

- |                                     |  |
|-------------------------------------|--|
| 2"x 24" J. & L. cone head.          | 24" size I Gisholt, 220 volt, motor drive, d. c. |
| 2"x 24" Warner & Swasey, hol. hex.  | 28" Milwaukee rigid, 4 1/2" spindle.             |
| 2"x 26" P. & W. turret lathe.       | 34" size K Gisholt, 4 1/2" spindle.              |
| 28" size J Gisholt, 3 1/2" spindle. |  |

#### SHAPERS AND PLANERS.

- |                                       |   |
|---------------------------------------|---|
| 16" Stockbridge shaper, p. d. f.      | 32"x 32"x 6' Gray, 2 heads.               |
| 14"x 6' Niles sgl. trav. head shaper. | 48"x 48"x 16' Pond, 3 heads.              |
| 26"x 26"x 6' Pond, 2 heads.           | 72"x 60"x 10' Pond, 2 heads.              |
| 30"x 30"x 6' Pond, 2 heads.           | 72"x 72"x 24' Pond, heavy large, 3 heads. |
| 30"x 30"x 8' Pond, 2 heads.           | 10"x 10"x 25' Pond, 220 v., d. c. motors. |
| 30"x 30"x 10' Pond, 2 heads.          |   |

#### MILLERS AND GEAR CUTTERS.

- |   |                                     |
|---|-------------------------------------|
| No. 1 1/2 Brown & S. univ., late type.      | No. 5 Brown & S. vert., old style.  |
| No. 2 Cincinnati plain, cone type.          | No. 3 36"x 8" B. & S. gear cutter.  |
| No. 1 Cincinnati plain, cone type.          | No. 4 36"x 9" B. & S. gear cutter.  |
| No. 2 Cincinnati univ., cone type.          | No. 6 60"x 12" B. & S. gear cutter. |
| No. 3 Brown & S. univ., old style.          | 15" Gleason bevel gear generator.   |
| No. 2 LeBlond plain, single pulley.         | 24" Gleason bevel gear planer.      |
| No. 3 LeBlond, universal, heavy, late type. | 48" Gleason bevel gear planer.      |

#### DRILLING MACHINES.

- |   |  |
|---|--|
| 26" B. F. Barnes, sliding head.               | 4' Prentice speed box radial.                          |
| 32" Aurora, sliding head.                     | 4' Niles semi-universal, old style.                    |
| 32" Aurora, sliding head, tapping attachment. | 5' Niles semi-universal, old style.                    |
| 60" Niles, heavy vertical.                    | 6' Niles semi-universal, old style.                    |
| 3' Grant radial drill and boring mch.         | 6' Pond heavy plain radial, 220 v., motor drive, d. c. |

#### GRINDERS.

- |                                     |                                   |
|-------------------------------------|-----------------------------------|
| No 2 Brown & Sharpe surface.        | No. 1 Tindell wet saw blade.      |
| No. 3 Rivett internal.              | 4"x 30" No. 11 Brown & Sharpe pl. |
| No. 1 Cincinnati cutter and reamer. | 12"x 66" No. 4 Landis universal.  |
| No. 3 B. & S. cutter and reamer.    | 18"x 96" Norton plain.            |

#### BORING MACHINES.

- |  |
|--|
| No. 1 Bement horizontal, 2 1/2" spindle, 5' table. |
| No. 2 Bement horizontal, 3 1/2" spindle, 6' table. |
| No. 2 Niles horizontal, 4" spindle, 6' table.      |
| No. 3 Bement horizontal, 4 1/2" spindle, 9' table. |
| 42" Niles boring and turning mill.                 |
| 72" Niles b. & t. mill, 220 v., motor drive, d. c. |

#### MISCELLANEOUS.

- Air compressor, type 10 Ingersoll-Rand, steam driven, capacity 538'.
- Air compressor, Ingersoll-Rand duplex, motor driven, with 35 h. p., d. c. motor, capacity 215'.
- Boilers, 100 h. p. Biglow, (5).
- Boilers, 200 h. p. Babcock & Wilcox.
- Engine, 164 h. p. McEwen, direct connected to 100 k. w. generator, d. c.
- Engine, 200 h. p. Brown, belted to 200 k. w. Westinghouse generator, d. c.
- Engine, 500 h. p. Allis-Chalmers, direct connected to 400 k. w. generator, 230 volt, d. c.

## SECOND-HAND MACHINERY

### FOR SALE BY

**The O'Brien Machinery Co., 119 N. Third St., Philadelphia, Pa.**

Special Bargain.

#### BORING AND TURNING LATHES.

Twelve 26"x10' Walter Scott boring and turning lathes, 2-step cone, double back geared, 5" belt; some of these lathes fitted with turret on carriage, six 3" holes in turret; turning lathes swing 5'4" between centers, 22" over carriage; price low for quick sale. Photo and complete specifications on request.

### FOR SALE BY

**Brownell Machinery Co., 11-13 Eddy St., Providence, R. I.**

Drill, 3½' Cincinnati-Bickford, radial	Grinder, No. 2 B. & S. universal.
Drills, 23" Prentice, b. g., p. f.	Grinder, No. 11 Brown & Sharpe pl.
Drills, 1-spindle Allen, b. b.	Grinder, 10"x 72" Diamond disc.
Drills, 2-spindle Allen, b. b.	Lathe, 14"x 6' Hendey, q. c. g. taper, collets.
Drills, 3-spindle Allen, b. b.	Lathe, 16"x 6' Filsmith.
Drills, 4-spindle Allen, b. b.	Lathe, 17"x 8' Sidney.
Drills, 16" 1-spindle Barnes.	Lathe, 18"x 8' Perkins.
Gear cutter, No. 2 ACincinnati.	Lathe, 24"x20' Reed, taper.
Gear cutter, 48" No. 5 B. & S.	Milling machine, No. 3 Cinti, plain.
Grinder, No. 1 Landis universal.	

### FOR SALE BY

**Frank Toomey, Inc., 127-131 N. Third St., Philadelphia, Pa.**

#### LATHES.

13"x 5' new Reed-Prentice type.  
 13"x 7' 8" new Carroll-Jamieson, plain change.  
 14"x 6' Hendey, quick change, taper attachment.  
 14"x 6' new Carroll-Jamieson, quick change.  
 15"x 6' new Sidney, quick change, swings 17".  
 16"x24' new Rahn-Larmon, double back geared, quick change.  
 17"x 8' new Sidney, quick change, swings 19".  
 19"x 8' new Sidney, quick change, swings 21".  
 25"x14' new Sidney, quick change, swings 27".  
 33"x12' Putnam.

#### TURRET LATHES.

21" Davis chucking. No. 1 Bardons & Oliver, screw.

#### VERTICAL BORING MILLS.

60" Bullard, two heads. 64" Niles, two heads.

#### PLANERS.

36"x36"x 8" Gray, two heads. 24"x20"x62" Pond, one head.  
 31"x23"x68" Smith, one head. 18"x 8"x 3' Wheeler, one head.

#### SHAPERS.

16" new Steptoe, b. g. 24" Hendey.  
 20" new Steptoe, b. g. 16" Barker, traveling head.  
 24" new Steptoe, b. g.

#### MILLING MACHINES.

No. 4 Brown & Sharpe, plain. No. 0 Steptoe, hand. new.  
 No. 3 Cincinnati universal. No. 1 United States, new, hand.  
 No. 1½ new American, plain.

#### GRINDERS.

No. 1 Fraser universal, new. No. 1 Landis internal.  
 No. 1 Grd. R., new cutter & reamer.

#### DRILLING MACHINES.

60" Bickford radial. 32" new Superior, sliding head.  
 48" Fosdick radial. 28" new Superior, sliding head.  
 36" new Superior, sliding head. 25" new Superior, sliding head.

## SECOND-HAND MACHINERY

### FOR SALE BY

**Russell Machine Company, 28th St. & A. V. R. R., Pittsburgh, Pa.**

#### LATHES.

48" Niles car wheel, m. d.  
38"x25" New Haven, raised to 56".  
38"x18" Pond, triple geared.  
28"x16" New Haven.  
27"x12" Pittsburgh, dbl. b. g.  
25"x16" Draper, triple geared.  
26"x10 6/8" Walcott, q. c. g.  
24"x16 6/8" Johnson lathe.  
24"x14" Gleason.  
24"x12" Lodge & Davis.  
20"x12 1/2" Prentice, h. s., c. r.  
20"x8 6/8" Walcott, q. c. g., (3).  
16"x 8" Porter, h. s., c. r.  
16"x 6" Blaisdell, h. s.  
16"x 5" Hendey, q. c. g., t. a.  
15"x 6" Hamilton, h. s.  
14"x 5" American speed lathe.  
24"x11" American semi-auto. turret.  
14"x 5" Fox brass lathe.  
Speed lathes, various sizes, (10).

#### PLANERS AND SHAPERS.

24"x24"x 8' Chandler planer, 1 head.  
33"x33"x10' Woodward-Powell, 2 hd.  
25"x36"x12' Pond, three heads.  
72"x56"x12' Betts planer, 2 heads.  
16" Garvin open throat shaper.  
20" Cincinnati b. g. crank shaper.  
24" G. & E. b. g. crank shaper.  
32" G. & E. b. g. crank shaper.

#### DRILLS AND BORING MILLS.

Hurke sensitive bench Nos. 0 & 1.  
No. 3 Prentice port. rope drive drills.  
20" Silver, new, plain and bk. gd.  
20" Foote-Burt mfrs. vertical.  
22" Aurora drill, b. g., sliding head.  
24" New Haven plain drill.  
24" Hofer, b. g., sliding head.  
3" Bickford radial, swing table.  
Beaman-Smith hor. boring, drilling & milling mch., 4" bar, 36" travel.  
4' Fosdick plain radial, tap. attach.  
4 1/2' Bickford plain radial, tap. attach.  
Garvin 4 spindle drill press.  
Bausch 12 spindle multiple drill.  
48" Niles car wheel boring mill.  
7'-10" Betts vert. boring mill, 2 hds.

#### HAMMERS, BULLDOZERS AND MILLERS.

1500 lb. double leg steam drop.  
1500 lb. single leg steam forging.  
2000 lb. Bliss auto. bd. drop forging.  
3000 lb. B.-S. auto. bd. drop forging.  
Bradley cushion helms, 40 lb.  
Little Giant 50 lb. power hammer.  
No. 2 Brown & Sharpe plain miller.  
No. 2 Brown & Sharpe univ. miller.

#### ENGINES, BOILERS AND PUMPS.

50 k. w. American steam elect. unit.  
5"x5 1/2" Erie vertical steam engine.  
4 h. p. Fowler vertical gas engine.  
40 h. p. Backus horiz. gas engine.  
50 h. p. White-Middleton gas engine.  
50 h. p. vert. submerged tub. boiler.  
6 h. p. vertical single flue boiler, (4).  
Pumps, various sizes and makes.

#### PUNCHES, SHEARS AND PRESSES.

50" throat Reade sgl. end punch and shear; massive construction.  
No. 8 L. & A. geared s. e. punch.  
3 1/2" throat, punching cap. 8"x3 1/2".  
Niagara No. 24 hand punch, 15" thr.  
Squaring shears, 20"x1-16" & 48"x1 1/2".  
Bliss geared slitting shear, 18" thr.  
Perkins No. 2 rotary shear, 12" thr.  
No. 3 R. & K. inc. presses, 2 1/2" str.  
No. 3 Kohler inc. press, 1 1/2" str.  
No. 56 dbl. housing knuckle press.  
No. DG-76 Ferracute single acting.  
No. 3 1/2 Greenerd arbor press.  
No. 4 Stevenson foot pwr., 6" thrt.  
No. 59 1/2 Toledo drawing presses, (2).

#### MISCELLANEOUS.

Air compressor, No. 0 Au-To 3"x4".  
Air compressor, s. cyl. 3x5", belted.  
Air compressor, double cyl. 2 1/2"x4".  
Air compressor, 6x6 Laidlaw hor.  
Bender, Wallace No. 11 angle, hd. pr.  
Bender, Hinman No. 1 Eye, hd. pr.  
Blower, Root No. 3 Acme, hand.  
Blower, pressure, No. 0 Sturtevant.  
Blower, pressure, No. 3 Sturtevant.  
Blower, Sturtevant No. 3 Monogram.  
Blower, Champion No. 4, fan or vol.  
Blower, Buffalo No. 8, pressure.  
Blower, Buffalo No. 10, pressure.  
Brazing table, all iron, 17"x20 1/2"x31".  
Centering mch., Whiton 6" sgl. spdl.  
Cold saw, Newton, 20" dia., 5 1/2" rd.  
Crane, 10" I-beam, 12'3" span, with Harrington 6,000 lb. chain hoist.  
Cutting-off mch., Hurlburt R. 4".  
Grinders, Western Nos. 1, 2 and 3.  
Grinder, 10" dbl. e. emery, on column.  
Grinder, Diamond 12" d. end bench.  
Grinder, Russell 12" dbl. end bench.  
Grinder, Lancaster 16" d. e. emery.  
Grinder, Barnes 20" wet tool.  
Grinder, 20" Ransom w.t., 250 v., d.c.  
Grinder, Dayton surface, 16 1/2"x36".  
Grinders, Landis 28x96; Cinti t. & c.  
Grinder, twist drill, cap. to 2 1/2".  
Keyseater, 18"x2", No. 2 Baker.  
Mortiser, Williamsport sash.  
Pipe mch., 12" Curtis, engine driven.  
Polishing stand, Diamond No. 2.  
Polishing stand, d. end, 42"x1" arbor.  
Polishing stand, Cuyahoga dbl. end.  
Silent chain belt, 16"x8"x1 1/2" p.  
Tapping machine, No. 2 Garvin.  
Vises, Forges, Tanks, Lockers.

## SECOND-HAND MACHINERY

### FOR SALE BY

**Jenkins Vulcan Spring Co., 6th & Washington Ave. Richmond, Ind.**

**PLANER.**

22"x22"x6' H. C. Pease & Co. planer.

**RIVETER.**

3" High Speed Hammer Co. high-speed riveter.

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### FOR SALE BY

**Strafer Machinery Co.,**

**318 N. Front St., Baltimore, Md.**

Drill press, No. 25 Foote-Burt high duty, fine condition.

Grinder, No. 2 Brown & Sharpe surface needs repair, low price.

Grinder, 6x22 Norton plain, should be overhauled.

Lathe, 17"x8' Sidney heavy duty, used nine months.

Lathes, 18"x8' Reed, with power feed turret on shear, low price.

Lathe, 21"x8' LeBlond heavy duty, equal to new price right.

Lathe, turret, 24" Gisholt like new, 6 hole in spindle, very reasonable price.

Milling machine, No. 5 Becker Brainard plain horizontal, for rough work.

Planer, 28"x28"x 8' New Haven, one head, fine shape, reasonable.

Planer, 48"x48"x10' Woodward-Powell, one head, fine condition.

Sold on approval, money returned if not satisfied.

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### FOR SALE BY

**W. J. Baird Machinery Co., 265 Jefferson Ave., E., Detroit, Mich.**

Boring mill, No. 32 Lucas horizontal, 31½" bar, used.

Boring mill, No. 1 Lambert horizontal, 3" bar, new.

Boring mill, 30" Gisholt vertical, used.

Boring mill, 30" Bullard vertical, used.

Boring mill, 42" Bullard vertical, used.

Grinder, No. 1 Security internal, new.

Grinder, No. 1 Capital internal, new.

Grinder, No. 1 Wilmarth & Morman universal, new.

Grinder, No. 3 Wilmarth & Morman surface, new.

Grinder, No. 1 Fraser universal, new.

Grinder, No. 2 Fraser universal, new.

Grinder, No. 2 Bath universal, used.

Grinders, No. 2 La Salle automatic surface, new, (2).

Lathes, 14"x6' Filsmith, d. b. g., new, (2).

Lathes, 25"x12' Sidney heavy duty, new, (2).

Lathes, 14"x6' Bradford tool room, new, (3).

Lathe, 15"x16' Crawford tool room.

Lathes, 16"x6' Bradford tool room, new, (2).

Lathes, 18"x8' Bradford, q. c., d. b. g., new, (2).

Lathes, 6"x30" type B-4 Dalton bench, new, (8).

Lathes, No. 3 Ideal precision bench, new, (4).

Lathes, No. 4 Stark precision bench, new, (2).

Milling machine, No. 3 Cincinnati vertical, new.

Miller, No. 3 Van Norman "Duplex", new.

Milling machine, No. 1½ Rockford plain, new.

Milling machines, No. 2 Rockford high-powered plain, new, (2).

Millers, No. 1 Rockford hand, new, (3).

Millers, No. 1 U. S. hand, new, (3).

Planer, 22"x22"x5' Wheeler, one head, used.

Planer, 36"x36"x12' American, one head, used.

Planer, 48"x48"x14' Pond, two heads, used.

Planer, 60"x60"x12' Pond, three heads, used.

Shaper, 20" Columbia crank, new.

Shaper, 7" No. 1 Rhodes horizontal crank, new.

## SECOND-HAND MACHINERY

### FOR SALE BY

**Brown-McDonald Machinery Co., 2323 N. 9th St., St. Louis, Mo.**

#### BORING MILL.

49" Bullard, vert., 1 plain & 1 swivel hd. on cross rail, face plate jaws, used.  
37" Bullard, vertical, 2 swivel heads, 1 turret, 1 plain, used.

#### LATHES.

13"x 6' South Bend, c. r., h. s., new.	16"x 8' American, q. c. g., used.
13"x 6' Champion, c. r., h. s., new.	20"x10' Walcott, q. c. g., d. b. g., c. r., h. s., new.
15"x 8' South Bend, c. r., h. s., new.	20"x10' Walcott & Wood, h. s., cpd. r., used.
16"x 8' South Bend, c. r., h. s., new.	14"x 8' Fitchburg, s. s., p. r., used.
16"x 8' Walcott, q. c. g., d. b. g., c. r., h. s., new.	

#### DRILLING MACHINES.

No. 1 Burke, bench, with chucks, new.	34" No. 101 C-O radial new.
Avey, high speed bench.	20" Silver, s. b., w. & l., new.
Demco, high speed, bench, used.	20" Silver, s. b., b. g., p. f., new.
14" Excelsior, 2 tables, new.	20" Champion, s. b., w. & l., new.
1" Leland Gifford, high speed, with pump.	20" Champion, s. b., b. g. & p. f., new.
	26" Aurora, b. g., p. f., new.
	30" Prentice, s. b., s. h., p. f., used.

#### SHAPERS.

20" Milwaukee, b. g., latest imp., new.	16" Queen City, back geared, used.
15" & 24" Hollingsworth, new.	24" Gould & Eberhardt, used.

#### SCREW MACHINES.

No. 4 Smurr & Kamen, geared friction head, p. f. to turret, new.  
No. 4 Defiance, geared friction head, p. f. to turret, used.  
No. 53 National Acme automatic, used.  
No. 52 National Acme automatic, used.  
Wood Tilted Turret.

#### MILLING MACHINES.

No. 1 U. S. hand, vise and arbor, new.  
No. 2 Pratt & Whitney, Lincoln type.  
No. OY Brown & Sharpe, used.

#### PRESSES.

No. 1 Loshbough-Jordan, o. b. i., new.	No. 51 Swaine, used.
No. 3 Loshbough-J., o. b. i., new.	No. 53 Swaine, used.
No. 4 Loshbough-J., o. b. i., new.	No. 19 Bliss, o. b. i., used.
No. 3 Kohler, o. b. i., used.	No. 1 Greenerd, arbor, used, (9).
No. 57 Swaine, geared, new.	No. 2 Greenerd, arbor, used, (6).
No. 4 American, o. b. i., used.	

#### SAWS.

Nos. 1 & 2 Marvel, draw cut, new. Williamson, metal, used.

#### GRINDERS.

Nos. 1, 2 & 3 Western, d. e., new.	Essley, cylindrical.
Nos. 1, 2 & 3 St. Louis, d. e., new.	No. 190 Wells, reamer & cutter, new.
No. 20 Safety E. W. Co., elec. (4).	Greenfield universal tool & cutter, used.
U. S., electric, 110 v., d. c., bench.	
Heald, ring, 20", used.	

#### COMPRESSORS.

Nos. 2, 3 & 4 Model B, vertical, belted, new.

#### MISCELLANEOUS.

Bolt threader, No. 734 Greenfield, new.	Pipe mch., No. 86 Forbes, 4", used.
Brake, 6' Dreis & Krump, 16 ga.	Pipe machine, No. 76 Forbes, 3", used.
Motor, 1 h. p. Advance, sgl. ph., new.	Pipe machine, 3" Borden, hand.
Motor, 5 h. p. General Electric, 3 ph., new.	Planer, 36"x36"x12' Patch, o. s., 1 hd. on cross rail, 1 head on side, used.
Motor, 10 h. p. General Electric, 3 ph., new.	Large stock of tinners' tools.

#### CHUCKS.

5" & 9" 3-jaw Sweetland, scroll, new.	3", 6", 7", 9" 3-jaw Cushman, univ., used.
8-12-14-16" 4-jaw Sweetland, independent, new.	16" 4-jaw Wescott, combination, cutting off.
No. 18 National Acme, s. o., die hd.	

## SECOND-HAND MACHINERY

### FOR SALE BY

**Chas. Molitor Machinery Co.,**

**124 S. Clinton St., Chicago, Ill.**

Special Bargains.

#### MILLING MACHINES.

No. 2 Cincinnati univ., vert. attach.  
No. 2 Cincinnati plain.

No. 3 Cincinnati plain.  
No. 3 Kempsmith plain, vert. attach.

#### TURRET LATHES.

18" Libby, (2).  
3x36 Jones & Lamson, (3).

3x40 Greenlee, (6).  
14" Milholland screw machine.

#### DRILL PRESSES.

36" Hamilton, sliding head.  
28" Hoeter, sliding head.  
9-spindle Pratt & Whitney gang.

22" American sliding head.  
4-spd. 20" Barnes drill and tapping.  
3-spindle Allen hi-speed.

#### GRINDERS.

Landis 18"x8' plain.  
Landis 14"x40" universal.  
No. 2 Oakley universal.

Thomson 10"x48" universal.  
Greenfield universal.  
Wells plain.

#### PUNCHES AND SHEARS.

8' Bertsch squ. shear, 12" gap, 10 g.  
36" Bertsch squ. sh., 15" gap, 12 g.  
36" Niagara square shear, 8 g.  
10' Niagara foot pwr. squ. sh. 18 g.

No. 3 Royersford punch and shear.  
Coulter & McK. vertical bulldozer.  
No. 4 Walsh press.  
33 double crank arch. press.

#### MISCELLANEOUS.

Broaching mchs., No. 2 Lapointe, (2).  
Milling and grinding machines.  
Saxon vertical, (2).

Cock grinder, 4-spindle vert, Foote-Burt.  
Rotary grinders, (2).

### FOR SALE BY

**Federal Machinery Sales Company,**

**8 N. Jefferson St., Chicago, Ill. 212 Sycamore St., Milwaukee, Wis.**

USED and NEW Tools.—Immediate shipment.

#### DRILLING MACHINES.

New 14", 16" and 20" drills, (12).  
New Snyder 28" sliding head drill, b. g., p. f.  
New Cleveland 36" sliding head drill, b. g., p. f.  
New 3' Mueller plain radial drill, gear box drive.  
Used 6' Bickford plain radial drill.

#### GEAR CUTTERS.

Used 24" Fellows gear shaper.  
Used 36" Fellows gear shaper.

#### GRINDERS.

New No. 1 Grand Rapids universal cutter and tool grinder.  
Used No. 1 Cincinnati universal cutter and tool grinder.  
Used M. S. S. Co. (Waukesha) 12" rotary ring grinder.

#### LATHES.

New Dalton type B-4, 6"x36" bench lathes on legs, (4).  
Used F. E. Reed 16"x6".  
New Oliver 16"x7" q. c. g., taper if wanted.  
New National 17"x8" q. c. g.  
New Hollingsworth 18"x8", one with taper, (2).

#### MILLING MACHINES.

Used No. 3 Cincinnati universal.

#### MISCELLANEOUS.

Boring and turning mill, 10' Pond vertical, two heads, used.  
Cold saw, 6" Burr No. 3, used.  
Cold saw, No. 15 Lea-Simplex, used.  
Pipe machine, 4" Victor, used.  
Planer, 30"x36"x16" Enterprise, 1 head, used.  
Turret lathe, 20"x3' Bridgeport, used.  
Above list is incomplete. Write us, giving specifications of anything required.



## SECOND-HAND MACHINERY

### FOR SALE BY

**Girard Machine & Tool Co., 491-493 N. Third St., Philadelphia, Pa.**

Boring and chucking machine, vertical, 36" Brown & Sharpe.  
 Engine lathe, 21"x12' Lodge & Davis, taper attachment, 7' between centers.  
 Engine lathe, 24"x12' Pratt & Whitney, 8' between centers.  
 Engine lathe, 25"x16' Blaisdell, taper attachment, 12' between centers.  
 Engine lathes, 26"x14' American, double back geared, quick change, (2).  
 Engine lathe, 26"x12' Fitchburg, double back geared.  
 Engine lathes, 26"x12' Wickes, double back geared, (2).  
 Engine lathes, 26"x14' Wickes, double back geared, (2).  
 Engine lathe, 28"x20' Putnam, 16' between centers.  
 Engine lathe, 42"x23' Johnson, triple geared and gear face plates, with two sets raising blocks 52" to 62".  
 Lathes, lot of 12", 14", 16" and 18" quick change, with various size beds.  
 Milling machines, No. 3 Brinard, back geared plain, No. 2 Van Dorn back geared miller, and lot of other makes.  
 Planers, 36"x36"x12' Wilson, two heads on cross rail.  
 Shapers, 20" and 24" Kelly; 24" Queen City, bk. grd., less than 6 months old.  
 Turret lathes, 2"x24" J. & L., grd. set-over hd., sgl. pulley dr., bar equip., (4).  
 Turret lathe, 3"x36" J. & L., late type, 24" and 21" Gisholt late type, (5).  
 Turret lathe, No. 3 Foster, 14" chuck capacity, oil pan, plain head.  
 Large lot of screw machines, drill presses, grinders, presses, etc.

### FOR SALE BY

**The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.**

#### ENGINE LATHES.

18"x10' LeBlond, c. r. & t. a., 5-step cone, (2).  
 17"x8' Sidney, c. r. & t. a., 3-step cone, (2).  
 18"x10' Springfield, c. r., 5-step cone.  
 17"x7' Fulton, c. r., g. f. h. plain turning lathe.  
 Old style stud lathes, (3).

#### TURRET LATHES.

14" Lodge & Davis, plain head.  
 14" Lodge & Davis, b. g.  
 24" Davis turret boring and chucking lathe, with forming rest.  
 1" Millholland plain head turret screw machine.  
 No. 4 Warner & Swasey g. f. h. turret screw machines, (13).

#### SCREW MACHINES.

6"-7" A Cleveland automatic.  
 2"-2 1/2" A Cleveland automatic.  
 No. 00 Brown & Sharpe automatic.  
 2" Hartford full automatic.

#### MILLING MACHINES.

No. 3 Garvin, plain, b. g.  
 No. 3 Burke, bench.  
 No. 2 Bristol, hand, with p. f. to table, (4).

#### GRINDERS.

No. 10 Cochrane-Bly auto. bench saw filing machine.  
 Whitney wet tool.  
 Greenfield univ. cutter and reamer.  
 B Standard Diamond grinders, (2).  
 No. 1 Warner & Swasey cock.  
 Type "DE" Hisey-Wolf internal.  
 8" Blount emery stand.

#### HAMMERS.

Coffman, post, power dr., 25 lbs., c. s.  
 100 lb. Cady, belt drop, c. s.

#### RIVETERS.

11 1/2" throat Giant rivet spinner.  
 No. 203 Giant rivet spinner.  
 No. 80 Giant riveting machines, (2).  
 Giant bench type riveting mchs., (2).

#### PUNCH PRESSES.

Toledo double acting toggle drawing press.  
 No. 11 Badger, hand.

#### MISCELLANEOUS.

Cold saws, 12" Burke, (2).  
 Cold saw, Higley.  
 Drill, 5 spindle Detroit semi-auto.  
 Filing machine, Simplex.  
 Gear cutter, No. 2 Whiton auto.  
 Hack saw, Excelsior, power.  
 Hack saws, Victor, power, (3).  
 Polishing stands, heavy, (2).  
 Polishing lathes, City Machine Co. double end, (8).  
 Polishing head.  
 Tapper, 6" Burke, bench.  
 Tapper, 4" friction vertical bench.

## SECOND-HAND MACHINERY

### FOR SALE BY

**E. L. Esley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.**

#### DRILL PRESSES.

5' Niles full universal radial.  
No. 24 Avey single spindle.

28" Aurora, sliding head.  
No. 11 Natco multiple drills,

#### GRINDERS.

No. 1 Cincinnati, universal.  
No. 3 B. & S. comb., cutter & reamer  
No. 190 Wells cutter and reamer.

No. 1 Norton univ. cutter & reamer.  
No. 1 4"x20" Morse cylindrical.  
No. 2 10"x32" Ott universal.

#### LATHES.

11"x 5' Star.  
13"x 5' Witcomb-Blaisdell, taper.  
16"x 8' Von Wyck, taper att.  
18"x 8' Bradford, q. c. g., taper att.

20"x 8' Hamilton.  
22"x12' Greaves & Klusman.  
24"x12' Prentice Bros.  
36"x14' Bradford.

#### SCREW MACHINES.

1" Cleveland automatic.  
1" Cleveland automatics.  
No. 5 Pearson, hand, fric. head.  
1"x15" Pratt & Whitney, plain head.

No. 4 W. & S. universal turret.  
No. 4 Foster, plain head.  
No. 22 Garvin, 17-16" cap., fric. hd.  
1" Smurr & Kamen, plain head.

#### MISCELLANEOUS.

Boring mach., No. 0 Fosdick.  
Broaching machine, No. 3 Lapointe.  
Cold saw, No. 14 Higley.  
Gear cutter, No. 12 B. & S. auto.  
Miller, No. 2-A Kempamith plain.  
Miller, No. 32 Kempamith, Lincoln type.

Pipe machine, No. 94 Merrell.  
Planer, 28"x22"x6' Gleason.  
Planer, 32"x32"x12' Davis & Egan.  
Planer, 42"x42"x8' Whitcomb.  
Punch, No. 16C New Doty, agl. end.  
Turret lathe, 2"x24" J. & L.

### FOR SALE BY

**A. D. White Machinery Co., - 105-114 N. Jefferson St., Chicago**

#### PUNCH PRESSES AND PUNCHES AND SHEARS.

No. 1 American Can, o. b. i.  
No. 3 American Can, o. b. i., (3).  
No. 3-P Ferracute, solid back.  
Waterbury reducing press, 74" str.

No. 29 Bliss, gang, double action.  
No. 6 L. & A., 4" thr., cap. 4" s. e.  
Rock River d. e. 24" thr., cap. 4"  
No. 37 Williams & W. gang punch.

#### DRILL PRESSES.

21" Cincinnati, tapping attach.  
23" Rockford, stationary head.  
30" Bickford, sliding head.

42" Barnes, sliding head.  
42" Miles radial, plain.  
New drills, 14" to 24".

#### ENGINE LATHES.

14"x 6' LeBlond engine lathe.  
16"x12' Beaman & Smith, taper.  
20"x 8' Boye-Emmes, d. b. g., q. c.

24"x10' Putnam.  
26"x25' Blaisdell.  
New lathes 13" to 18".

#### MILLING MACHINES AND PLANERS.

No. 1 Brown & Sharpe plain.  
No. 3 Cincinnati plain.  
No. 3-B Becker vertical, (3).  
22"x22"x5' Ingersoll slab.

No. 6 Brainard, Lincoln.  
16"x16"x36" Draper planer.  
30"x27"x 6' Putnam planer.

#### SCREW MACHINES.

7-16" Cleveland, friction feed.  
1" Cleveland, friction feed.  
1" Cleveland, friction feed.  
1" Cleveland, jigger feed.

1" Hartford, (3).  
1" Cleveland.  
1" LaVigne.  
1" Cleveland, semi-automatic.

#### MISCELLANEOUS.

Blower, No. 7 Sturtevant high pressure.  
Gas engine, 35 h. p. Columbus.  
Gas engine, 55 h. p. Bruce McBeth.  
Grinder, No. 38 Safety Plow.  
Grinder, Springfield, double wheel water.  
Grinder, Leland & F., water.  
Hammer, 500-lb. Sandage.

Hobber, No. 1 Farwell.  
Oil gas generator, No. 3 American.  
Rivet spinner, Grant, 3/16" & 5/16".  
Saw, No. 54 Nutter-Barnes.  
Tapper, No. 2 Garvin automatic.  
Tube cutter, No. 5 Fox.  
Turret lathe, No. 3 Foster, pl. hd.  
Turret lathe, 24"x26" Greenlee.  
Turret lathe, 20" Fay & Scott.

## SECOND-HAND MACHINERY

### FOR SALE BY

**Cleveland Belting & Mchy. Co., 1922 Scranton Rd., Cleveland, O.**

#### SPENCER ENGINEERING CO. MACHINERY

List of Machinery at the Spencer Engineering Co., Toledo, O.

Air chucks, with air cylinders and connections, (47).

Air hoist, 14" diameter, 8' lift.

Air hoists, 8" bore, 8' lift, (2).

Air tanks, with valves & gauges, (2).

Annealing furnaces, 8'x32" Quigley, (2).

Boring machines, No. 416 Baker, latest type, (2).

Grinders, Norton, (3).

Grinders, wet, Townsend, (17).

Grinder, disc, No. 4 Gardner.

Grinder, disc, No. 14 Besly.

Grinding jacks, various sizes, (3).

Hydraulic accumulators, (2).

Hydraulic banding presses, (2).

Hydraulic pumps, (2).

Lathes, engine, 16" American, d.b.g., 8' bed, (22).

Lathes, engine, 18" American, d.b.g., 8' bed, (21).

Lathes, engine, 18" American, grd. hd., single pulley dr., 8' bed, (9).

There is also in this plant a large quantity of pulleys, all sizes, line shafting, hangers and belting of all descriptions. Also a large stock of tool room and stock room supplies.

Lathe, 48"x16" Industrial, c. r.

Lathe, tool room, 16"x8" American, taper attachment, compound rest.

Lathe, turret, 16" American.

Lathes, turret, 18" American, d.b.g., 8' bed, (14).

Lathes, turret, 18" American, grd. head, 8' bed, (11).

Lathe, turret, 18"x8" Prentice, grd. head, with carriage.

Miller, 20" Gould & Eberhardt.

Oil pump, cap. 5 gallon per minute.

Press, geared, No. 58 Toledo.

Roller marking machines, (2).

Shell spraying machines, (2).

Shot blast machines, Gray, (3).

Steel tank, 3 bbl. 42x36x30 deep.

Steel tank, 10 bbl., 5x6x3'4", steam jacketed.

Thread millers, Smalley-General, equipped with air chucks, air cylinders and valves, (10).

Tool hardening furnace.

### FOR SALE BY

**Wm. C. Johnson & Sons Machinery Co.,**

**1001-3-5 N. Sixth St.,**

**St. Louis, Mo.**

#### LATHES.

14"x 8' Whitcomb-Blaisdell.

14"x 8' Monarch q. c. gear.

16"x 7' Oliver q. c. gear.

18"x 9' Chard.

20"x 8' Lodge & Shipley.

21"x10' LeBlond, heavy duty.

22"x10' Davis q. c. gear.

26"x10' Bridgeford q. c. gear.

26"x12' Bridgeford q. c. gear.

22"x22' screw cutting.

3"x36' Jones & Lamson.

#### PLANERS.

34"x34"x 8' Pease.

26"x26"x 5' Pease.

30"x30"x 8' American.

36"x36"x12' Pond, 2 heads.

#### STEAM HAMMERS.

600 lb. Bement Miles.

1100 lb. Bement Miles.

#### POWER PRESSES.

No. 61 Bliss.

No. 2 inclinable.

No. 6 Niagara inclinable.

No. 40 Swaine arch press.

No. 42 Toledo horn press.

#### DRILLING MACHINES.

2-spindle Kern high speed.

24" Henry & Wright high speed.

16" Elmore high speed.

24" Baker Bros. heavy duty.

24" Colburn D-4 heavy duty.

30" Dietz Gang radial.

#### MILLING MACHINES.

No. 4 Becker plain.

No. 34 Osterlein plain.

No. 3 LeBlond plain.

No. 3 Owen plain.

#### MISCELLANEOUS

Blower, No. 3 Root.

Bolt cutter 14" Blakeslee.

Bolt header, 14" Blakeslee.

Brake, 8' steel, No. 18 capacity.

Brake, 10' steel, No. 16 capacity.

Bulldozer, No. 3 Fisher.

Gear cutter, 26" Cincinnati.

Grinder, No. 38 plowshare.

Grinder, 10"x30" Landis plain.

Grinder, 12"x36" Landis universal.

Punch, 24 throat Rock River, 4 in 4.

Saw, No. 5 Massachusetts, h. s.

Saw, Atkins Kwik Kut.

## SECOND-HAND MACHINERY

### FOR SALE BY

**Badger-Packard Mchy. Co., 133-139 W. Water St., Milwaukee, Wis.**

#### LATHES.

- 11"x 5' Seneca Falls "Star" No. 30-E, with countershaft.
- 16"x 6' Cincinnati, q. c. g., 3-st. c., d. b. g., with c. s.
- 16"x 6' Prentice, l. c. g., 4-st. c., s. b. g., with equipment.
- 29"x14' Putnam, l. c. g., 5-st. c., s. b. g., with equipment and c. s.
- 24"x16' old type, loose change gear, 4 s. c., s. b. g.

#### MISCELLANEOUS.

- Air compressor, 10"x10" horizontal, center crank, belt driven.
- Bolt cutter, single head, 1 1/2" Acme, Class "A", with equipment.
- Chucking and turning mchs., Potter & Johnston automatic.
- Drill, 24" Foote-Burt No. 25, high duty, sgl. pulley drive.
- Engine, steam, 25 h. p., center crank, with governor.
- Exhauster, planing mill, No. 40 Sturtevant, slow speed.
- Feed water heater, 24"x6' 8" open pattern.
- Glue heater, steam, 100 gal. Advance Wetmore.
- Grinder, No. 6 Besly disc, double, spd., belt dr., with c. s.
- Grinder, 72" Holmes auto. knife.
- Grinder, 10"x20" Landis universal with equipment.
- Grinder, No. 3 Oesterlein "Ohio" universal and tool.
- Hammer, Star upright power, 35 lb.
- Oven furnace, No. 1 Stewart, with blower.
- Oven furnace, No. 27 Stewart, without blower.
- Planer, 24"x24"x16' Fitchburg.
- Planer, 30"x30"x 8' Steptoe-McFarlane, single head, with c. s.
- Punch, style M Badger, rapid action, 6" throat, 1"x3 1/2" cap.
- Purifier, 30"x6' Buffalo, closed pattern.
- Rivet spinning machine, Grant, 110 v., d. c., motor driven, 3/16" cap.
- Screw machine, 1 1/2" Cleveland auto.
- Screw mch., 1 1/2"x17" Hartford auto.
- Steam pump, 5"x2 1/2"x6" Whittier duplex.

## Second-Hand Wood-Working Machinery

For a large list of used wood-working machinery, consult the **Wood-Working Machinery List**, a publication similar to this but devoted to the advertising of saw-mill and wood-working machines. A copy may be had on application to the publisher, **A. H. Hitchcock, 1220-1235 Caxton Building, Chicago, Ill.**

# Pattern Shop Machinery

Special Prices if you refer to this ad.



## Band Saws

Chicago No. 00 27 in. Wheels  
 " No. 0 32 " "  
 " No. 1 36 " "



## Saw Tables

Chicago No. 5 Stationary Table  
 " No. 9 Tilting Table  
 " No. 10

Boring attachment if wanted.



## Jointers

8 in., 5 and 6 ft. tables and guard.  
 12, 16, 20, 24 and 30 in., 7 ft. tables  
 and guard.

Trimmers, Lathes, Core Box Tools, etc.

Ask for full descriptions

## Chicago Machinery Exchange

1211-1227 Washington Boulevard, Chicago.

## NEW MACHINES IN STOCK

No. 2 Garvin Screw Slotting Machine.  
 10x30 Webster & Perks Universal and Cylindrical Grinders.  
 No. 1 Toledo Hand Milling Machines.  
 Snyder Drill Presses, 23" Stationary head, 25" Sliding head.  
 No. 2 Grand Rapids Universal Grinder.  
 14"x6' Champion Q. C. Lathe with taper attachment.  
 No. 2-B Washburn Shops Drill, two-spindle.  
 No. 32-B Demco Floor Type Drill Presses, two and three-spindle.  
 No. 1 Wilmarth & Morman Universal Grinder.  
 No. 0 Bickett Profiling Machine.  
 Webster & Perks Nos. 1 and 2 Floor Type Grinders.  
 23" Demco Floor Type Drill.

## USED MACHINES IN STOCK

14x6 Hendey Lathe, tie bar type.  
 14x6 Rockford Plain Lathe.  
 No. 1 Cleveland Boring Mill, 24" bar.  
 No. 1 Wilmarth & Morman Surface Grinder.  
 12"x6" and 24"x12" Gould & Eberhardt Gear Hobbers.  
 18x8 Greaves & Klusman Lathe.  
 No. 3-26" and No. 3-36" Brown & Sharpe Gear Cutters.  
 No. 1 Brown & Sharpe Automatic Screw Machine.  
 2x24 and 3x36 Jones & Lamson Turret Lathes.  
 No. 1 two-spindle Garvin Tapping Machine.  
 No. 2 Bardons & Oliver Turret Lathe.  
 No. 1 Warner & Swasey Hol. Hex. Turret Lathe, bar & chucking.  
 No. 3-A Warner & Swasey Hol. Hex Turret Lathe.

## The Biggs-Watterson Co.

Cleveland, Ohio. Branches: Dayton, Ohio Detroit, Mich.

# In Stock for Immediate Shipment

## LATHES

7"x30" CANTON Semi-Precision Screw Cutting Engine Lathe.  
10"x 4' SHEPARD Semi-Q. C. G. Screw Cutting Engine Lathe.  
12"x 5' SHEPARD Semi-Q. C. G. Screw Cutting Engine Lathe.  
14"x 6' SIDNEY 3 Step Cone, Double B. G., Q. C. G. Lathe.  
16"x 8' SIDNEY 3 Step Cone, Double B. G., Q. C. G. Lathe.  
18"x 8' SIDNEY Heavy Duty, Q. C. G., Double B. G. Lathe.  
16"x 8' PRENTICE Screw Cutting Lathe with Taper Attachment.  
17"x10' SIDNEY Heavy Duty, Q. C. G., Dbl. B. G. Engine Lathe.  
18"x 8' BRADFORD Heavy Duty Lathe with Taper Attachment.  
18"x 8' BRADFORD Heavy Duty Q. C. G. with Taper Attachment.  
25"x14' SIDNEY Heavy Duty, Q. C. G., Dbl. B. G. Engine Lathe.  
97"x32' MARQUETTE Triple Geared Lathe, 21' between centers.

## DRILLING MACHINES

14" ROCKFORD Sensitive, Sliding Head, Motor Driven.  
16" CLEVELAND H. S., B. B. Two Spindle Hi-Speed Sensitive.  
20" SILVER Stationary Head, Wheel and Lever Feed.  
22" PRENTICE Sliding Head, B. G., Power Feed.  
24" CINCINNATI Sliding Head, B. G., Power Feed.  
25" CLEVELAND Sliding Head, B. G., Power Feed.  
28" CLEVELAND Sliding Head, Hi-Speed, Dbl. B. G., Pwr. Fd.  
34" BARNES Sliding Head, B. G., Power Feed.  
No. 310 BAKERS Heavy Duty Hi-Speed, All Geared Feeds, (6).  
24" FOOTE-BURT Heavy Duty Hi-Speed, All Geared Feeds, (2).  
No. 6 PRATT & WHITNEY 8-Spindle Multiple Drill, Cap. 1".  
8' AMERICAN Plain Radial with Single Pulley gear box drive.

## MILLING MACHINES

No. 1 VALLEY CITY Full Universal Miller.  
No. 1 VALLEY CITY Plain Manufacturing Miller.  
No. 1 HENDEY Plain Manufacturing Miller.

## GRINDERS

No. 1 LANDIS 10x24" Universal Grinder.  
No. 3 LANDIS 20"x42" Universal Grinder.  
4"x30" MORSE Plain Manufacturing Grinder.  
6"x32" NORTON Plain Manufacturing Grinder.  
10"x50" NORTON Plain Manufacturing Grinder.

## BOILER PLATE MACHINERY

6' SCULLY Pyramid Type Bending Rolls, Capacity 3".  
6' LENNOX Rotary Slitting Shear, capacity 1" plate.  
WANGLER Rotary Beveler, capacity 1" plate.

## MISCELLANEOUS

No. 3 LAPOINTE Broaching Machine.  
No. 1 J. N. LAPOINTE Broaching Machine.  
9"x8" INGERSOLL-RAND Sgl. Stage Belt Driven Compressor.

**We also have a large stock of SHAPERS,  
PLANERS, PRESSES and other equipment**

**D. M. Osborne Machinery Co.**  
221 St. Clair Ave., N. E., Cleveland, O.

# For the shops who want BIG TOOLS Low—

As they will have to be moved at once, we won't hold these Machines for the prices they are actually worth. Instead will turn them into money at once.

## NEW Planer Type Milling Machine

52 in. between housings, 48-in. under rail, 16-ft. Table inside pockets. Fitted up with four heads—two vertical on Crossrail arranged for Motor or C- each housing, arranged for Motor-drive or C-shaft drive. Modern features not found on other machines of its style built today.

## NEW Open-Side Planer

48-in. x 48-in. x 16-ft. three (3) heads two on crossrail and one on housing arranged for Motor, or C-shaft drive.

## NEW Upright Boring Mill

10-14 ft. extension style, two heads on Crossrail arranged for Motor or C-shaft drive. Latest Heavy Pattern.

## NEW LATHES

- 36-in. Swing, 20-ft. bed, Quick-change, Double Back-geared
- 36-in. Swing, 18-ft. bed, Quick-change, Double Back-geared
- 36-in. Swing, 16-ft. bed, Quick-change, Double Back-geared
- 30-in. Swing, 20-ft. bed, Quick-change, Double Back-geared
- 30-in. Swing, 16-ft. bed, Quick-change, Double Back-geared
- 29-in. Swing, 20-ft. bed, Quick-change, Double Back-geared

26-48-in. Swing, 32-ft. bed, McCabe Double-spindle, turns 26-ft. between centers, Triple-geared, and with Internal Geared Face-plate Drive, ratio of gearing 72 to 1, complete with full equipment of two complete lathes standing on the floor space of one.

26-48-in. Swing, 24-ft. bed, McCabe Double-spindle, turns 18-ft. between centers. Radial Drill—10-ft. Swing, Baush, Motor-driven.

Horizontal Boring Machine—4-in. bar, Floor type, Fordick.

Turret Lathes—28-in. Swing, 4-in. hollow-spindle, Pond, Rigid type.

Grinders—Roll Grinder, Table 96"x8", 44" between centers, Diamond.

Roll Grinder, Table 66"x12", 36" between centers, Bridgeport Universal. No. 3—Brown & Sharpe.

Milling Machine—No. 4—Brown & Sharpe, Universal, complete Universal attach.

Bevel Gear Planer—24-in. capacity, Gleason, full equipment, like new machine.

Shaft Straightening Machine—Capacity up to 4½" shaft, 25-ft. long, Medart.

Double-End Centering & Cutting-Off Machine—9-in. capacity, Bement-Miles.

Multiple Drill—Four-spindles, capacity up to 1½ in., Niles Tool Works.

New Shapers—28 and 32 in. Stroke, Single Pulley Drive, Speed-box.

Bending Rolls—14 ft. between housings, top roll 14" diameter, lower rolls 10-in., drop-end housing, with Motor and controller, Wickes Bros., 10-ft. 2-in. between housings, top roll 9½-in., diameter lower rolls 8¼ in., drop-end.

Horizontal Punch—60 in. Thrt. cap., 3½-in. hole thru 1-in. plate, wt. 68,000 lbs.

New Punches and Shears—Single-end, Combination for Punching or shearing.

36-in. throat—weight 25,000 lbs., arranged for Motor-drive.

50-in. throat—weight 36,000 lbs., arranged for Motor-drive.

Punching capacity 2" hole through 1" plate.

Shearing capacity 1½-in. plate.

Punching speed 50 strokes per minute.

Hydraulic Riveting Equipment—8-ft. gap, with accumulator, pump, overhead crane, hoist, etc., Bement-Miles.

## For the Shops Who Want Smaller Tools—

Crowded out of this page are hundreds of others—Write for our Complete List

**J. J. McCabe Lathe & Mch'y Corp'n, 149 Broadway, New York**

## Second Hand Machinery

### DRILLS.

No. 22 Demco sensitive bench, new, (9).  
Four spindle Barr sensitive.  
No. 117 Moline heavy single spindle, (2).  
No. 68-D Moline, floor type, 36" rail, eight heads, good as new.

### ENGINE LATHES.

21"x10' LeBlond crankshaft lathes, good condition, (2).  
24"x12' Reed, compound rest.  
30"x10' Fifeild.  
32"x16' Fay & Scott, compound rest, tur. on shears, turret tool post, fine condition.

### MILLING MACHINES.

No. 12 Brown & Sharpe, hand. | No. 2 Kempsmith plain.

### TURRET LATHES AND SCREW MACHINES.

18"x6' Imperial chucking lathe, with turret.  
1" Truman M. Smith wire feed, screw machines, plain head, one new, one slightly used, (2).  
14" Gray turret lathes, 18" swing pan bed, back geared, (2).

### SHAPERS.

28" Steptoe shifting belt.

### MISCELLANEOUS.

Die sinker, No. 2 Hendey. | Grinder, surface, Walker.  
Presses, No. 52 Bliss incline | Pipe machine, 3" Stoeber.  
type, magazine feed, (7).

## Marshall & Huschart Machinery Co.

17 S. Jefferson St., Chicago, Ill.

915 Chemical Bldg., St. Louis, Mo.

## Grand Rapids Specials

Balancing machines, Rockford, bench, (6).  
Bolt cutter, 2" Acme.  
Boring mill, 24" vertical.  
Brake, No. 4 Chicago, hand.  
Compressor, 4½x5 Imperial, type 12, (2).  
Drill, 26" Sibley, sliding head.  
Drill, 10-spindle Grand Rapids multiple.  
Electric welder, No. 140 Toledo.  
Flexible shaft, No. 5 Plank.  
Furnace, No. 4 Hardinge.  
Grinder, disc, 53" Besly No. 19.  
Grinder, drill, No. 2½ Avey high speed.  
Grinder, drill, style B Yankee.

Grinder, universal, No. 2 Bath.  
Hack saw, No. 4 Monarch.  
Hammers, 100 lb. Little Giant, power, (2).  
Hammer, 230 lb. Little Giant, power.  
Lathes, 24"x8' South Bend, 36" gap, (4).  
Miller, No. 25 Becker plain.  
Miller, No. 37-B Chicago, small.  
Miller, No. 1-C Fox plain.  
Miller, No. 3 heavy, plain.  
Molding mch., portable, Arcade.  
Sand blast outfits, No. 6 Pangborn, (2).  
Shears, circle, No. 278 Waugh.

*Complete list on application*

## McMullen Machinery Company

"Everything in shop Equipment"

Grand Rapids, Mich.



# Re-MANUFACTURED - (ORIGINATED BY US) - MACHINE TOOLS

## Real Bargains

Every Re-Manufactured machine is being offered at real bargain prices. In fact, we can sell our Re-Manufactured tools, which compare favorably with new, at prices lower than those of the ordinary used tools.

### RADIAL DRILLS

- 1-5' Universal.
- 1-8' Putnam.
- 1-5' Baush.
- 1-6 1/2' Baush.

### BORING MACHINES

- 1-30" Bullard Vertical.
- 1-52" Niles Car Wheel Borer.
- 1-Beaman & Smith Horiz. Cylinder Boring and Milling.
- 1-6" bar Sellers Cylinder Boring and Facing machine.

### PLANERS

- 1-24"x24"x 6' Hamilton.
- 1-24"x24"x 6' American.
- 1-30"x30"x10' Cincinnati, 2 heads.
- 1-36"x36"x10' Cincinnati, 2 heads.
- 1-36"x36"x13' Sellers Spiral, 2 hds.
- 1-48"x48"x18' Sellers Spiral, 1 hd.
- 1-50"x30"x 8' Gray.
- 1-60"x38"x 8' Gray.
- 1-60"x38"x10' Gray.
- 1-76"x48"x18' Woodward & Powell, 3 heads.

### MILLING MACHINES

- 1-No. 9 Kempsmith Plain.
- 1-No. 24 Brown & Sharpe.
- 1-No. 2 Becker-Brainard Plain.
- 1-No. 2-A Kearney & Trecker Pl.
- 1-No. 3 Brown & Sharpe Vertical.
- 1-No. 5 Becker-Brainard Plain.
- 1-No. 4 Cincinnati Plain.

### LATHES

- 1-18"x 8' Milwaukee.
- 17-25"x10' LeBlond Heavy Duty.
- 1-26"x10' American.

### GEAR CUTTERS

- 1-No. 3-28" Brown & Sharpe Spur.
- 1-36" Gould & Eberhardt Hobber.

### GRINDERS

- 3-12"x24" Modern Plain.
- 2-12"x36" Landis Plain.
- 1-12"x42" Cincinnati.
- 1-No. 70 Heald Internal.
- 1-No. 14 Bath Universal.
- 1-No. 22 Brown & Sharpe Internal.

### TURRET & SCREW MACHES.

- 1-12" Foster-Kimball.
- 3-16" Pratt & Whitney.
- 1-24" Gisholt Turret.
- 1-24" Warner & Swasey Chucking.
- 1-24" Foster Turret.
- 1-14" American Screw.

### PRESSES, ETC.

- 1-36" wide Power Corrugating Roll.
- 1-96" Robinson Power Brake.
- 1-No. 2 Bethlehem Power Slitting Shear.

### MISCELLANEOUS

- 1-7 1/2" Nutter-Barnes Cold Saw.
- 1-No. 525 Newton Steel Foundry Cold Saw.
- 1-Williamson Metal Band Saw.

*Write for our Green List describing these and many others*

## HILL, CLARKE & CO. OF CHICAGO

649 W. WASHINGTON BLVD., CHICAGO, ILL.

# THE MOTTCH & MERRYWEATHER MACHINERY CO

707-715 Lakeside Ave., N. W., Cleveland, Ohio

BRANCHES: DETROIT, CINCINNATI, PITTSBURGH

Practically New and at Pre-War Prices. Surplus Equipment of the  
Lincoln Motor Co., Manufacturer of Liberty Airplane Motors

## GRINDERS.

6 No. 18 Bryans Internal.

6 No. 1½ Cincinnati Cutter and Tool.

## BROACHING MACHINES

2, No. 0 J. N. Lapointe.

VALUES

- 6 No. 18 Bryan Internal.
- 6 No. 1½ Cincinnati Cutter and Tool.
- 6 4-spindle Foote-Burt Valve.

- 12 No. 60 Heald Cylinder.
- 3 12x24" Modern Plain.
- 6 10x50" Norton Plain.

### MILLING MACHINES.

- 7 Type "A" Briggs.
- 6 10" Pratt & Whitney Automatic.
- 6 No. 15 Garvin Plain.
- 1 No. 22 Garvin Vertical.
- 2 2" Pratt & Whitney Spline.
- 10 No. 6 Whitney Hand.

- 2 No. 0 J. N. Lapointe.

### LATHES.

- 3 9"x12" Sundstrand Mfg.
- 4 16"x10" Rahn-Larmon Standard.
- 1 16"x10" Rahn-Larmon Standard.
- 10 21"x10" South Bend.
- 3 24"x10" Lodge & Shipley, Selective Hd.

### SCREW MACHINES

- 2 No. 2 Smurr & Kamen 2" capacity.

### TURRET LATHES

- 6 2¼"x26" Cincinnati Acme Plain.
- 10 3¼"x36" Cincinnati Acme plain.

**We Also Have a Large List of Tools in  
Our Own Stock and Solicit Your Inquiries**

# Used Machine Tools

---

- 2—5" bar Barrett Horizontal Boring Mills.
- 1—Beaman & Smith four spindle double end Cylinder Boring Machine.
- 1—36" Ingersoll Vertical Milling Machine.
- 1—2-A Becker Vertical Milling Machine.
- 1—42"x42"x26' J. S. Wheeler Planer.
- 1—48"x30"x16' Gray Planer.
- 1—6-18 Besly Grinder.
- 1—10-18-G Besly Disc Grinder.
- 1—10-12-L Besly Grinder, Ring Wheel Chucks.
- 1—24"x18' Greaves-Klusman Lathe, q.c.g., d.b.g.
- 2—38x20 New Haven Lathes, (not screw cutting).
- 1—56"x14' Engine Lathe, (not screw cutting).
- 1—21" Gisholt Gap Turret Lathe.
- 2—24" Gisholt Gap Turret Lathes.
- 1—28" Gisholt Turret lathe.
- 1—No. 2 Warner & Swasey.
- 1—Gould & Eberhardt 14" B. G. Crank Shaper.
- 5—No. 2½ Avey Column Type Drills with tapping attachment.
- 1—Four Spindle Acme Nut Tapper.
- 1—No. 2 Plain Cincinnati Horizontal Miller.
- 1—No. 3 Cincinnati Universal Miller.
- 1—30"x30"x8' Cincinnati Planer.
- 16", 20" & 24" Gould & Eberhardt Shapers.

---

**Vonnegut Machinery Co.**  
Indianapolis, Ind.

## We own and offer for sale several Heavy Presses

- 200 ton Farrell Foundry Embossing press. Stroke  $1\frac{1}{4}$ ". Flywheel  $48 \times 4\frac{1}{2}$ . Estimated weight  $7\frac{1}{2}$  tons. Price... \$1000.
- 400 ton Ferracute Coining press E. G. 54. Stroke 1", Flywheel  $37 \times 7$ . Estimated weight 5 tons. Price..... 1500.
- 800 ton Ottumwa Embossing Press. Stroke  $1\frac{1}{2}$ ", Flywheel  $32 \times 5$ . Estimated weight 6 tons. Price..... 2000.
- Straight side Stiles pattern heavy geared Press. Stroke 2", Flywheel  $36 \times 4$ . Estimated weight 6 to 8 tons. Price.. 1000.
- No. 164 Toledo double acting drawing press, takes 20" blank. Weight 9 ton, geared and reinforced..... 2000.
- No. 27 Bliss 1000 ton press. Absolutely new. Now set up.
- No. 6—No. 60½ Bliss rack and pinion Presses.

*All here and can send photos.*

*Several others listed with us—tell us your wants*

### Some Specials from our stock

- 30" Bullard Vertical Mill, turret head.....\$ 800.
- 54"  $\times$  21' Pond Lathe, face plate drive..... 2700.
- 4 spindle Foote-Burt adjustable drill, 1" capacity..... 550.
- 2—No. 4 Adriance O. B. Presses..... 350.
- 42" G. & E. spur gear cutter..... 950.

### These Lathes are bargains

- 2—New 22"  $\times$  10' Reed compound. Each.....\$ 1550.
- 3—New 8"  $\times$  60" Lo-Swing. Each..... 1350.
- 6—20  $\times$  8½ Roulstead overhauled..... 550.
- 24  $\times$  20 Niles Compound Taper, H. S..... 1200.
- 6—24  $\times$  22 P. & W. Taper, Light pattern ..... 650.
- 26" Milwaukee turret..... 1000.
- 4—8½  $\times$  16 No. 10 Potter & Johnston semi-automatics. A big bargain if you can use them. Each..... 500.

**J. L. Lucas & Son, Inc.**  
3 Fox St., Bridgeport, Conn.

# Machine Tools

## Immediately Available

One Kempsmith No. 3 Universal Milling Machine, new.  
 One Kempsmith No. 3 Plain Milling Machine, new.  
 One Brown & Sharpe No. 1 Plain Milling Machine, with spiral univ. centers, spiral cutting attachment, pump, first-class condition.  
 One Chandler Planer 36"x12", with two heads, arranged for motor drive, high speed type, excellent condition.  
 One Pratt & Whitney 30"x14" Planer, one head, excellent condition.  
 Two Fitchburg Planers, 32x10', two heads, excellent condition.  
 One Pond Planer 30x10', one head, excellent condition.  
 One Pond Planer 27x 9', one head, excellent condition.  
 One Fifield 30"x10' triple geared Engine Lathe, excellent condition.  
 Two No. 4 Foster Hand Screw Machines, complete, excellent cond.  
 One Pratt & Whitney 14"x18 Turret Lathe, with equipment, excellent condition.  
 One Bath Universal Grinder No. 2, 10x24, guaranteed practically new, complete equipment.  
 One Fraser Universal Grinder, complete equipment, practically new.

**Factory & Mill Supply Co.**  
 137 Oliver St., Boston, Mass.

## Below are a few machines from our large stock

### GRINDERS.

Brown & Sharpe No. 3 Cutter and Reamer Form. Att.  
 Reid No. 2 Automatic Surface, with Magnetic Chuck.  
 Fraser No. 1 8"x20" Universal, Convertible Type.  
 Cady 12"x2" Wet Tool.

### LATHES.

Jones & Lamson 2"x24" Flat Turret, Bar Equipment.  
 Potter & Johnston No. 5-A Semi Auto., Back Facing Att.  
 Fitchburg 14"x4' Engine, Plain Change Gear.  
 Flather 7", on Pan with legs.

### MILLING MACHINES.

Burke No. 2 Bench. Power Feed, Tilting Index Centers.  
 Brown & Sharpe No. 7 Plain. 47" table.  
 Rockford No. 3 Hand, Swivel Vise, Vertical Attach.  
 Garvin No. 13 Plain, A-1 condition.

### PLANERS.

Whitcomb 24"x24"x8" Second Belt Drive.  
 Wheeler 26"x26"x7", Single Head.  
 Putnam 30"x30"x6", Single Head, all feeds.  
 Pratt & Whitney 52"x52"x20", two heads on rail.

### MISCELLANEOUS.

Rand Duplex Air Compressor 13"x26"x20".  
 Rand Duplex Air Compressor 10"x24"x20".  
 Southworth No. 2, Hand, with Garvin Air Chucks.  
 Sellers 30" Punch & Shear, Motor Drive.

**LYND-FARQUHAR COMPANY,** Machine Tool Values  
 BOSTON, MASS.

# Look Over This Exceptional List

## First Class Machine Tools

### Immediate Delivery

- 1-33"x33"x10' Knecht (Bickett) Planer, 4 heads.
- 1-36"x36"x12' Gray Planer, 4 heads.
- 1-36"x36"x24' Pond Planer, double head.
- 1-37" American Vertical Boring Mill, 2 heads.
- 1-38"x20' New Haven Engine Lathe, c. r.
- 1-Cleveland Heavy Punch, 42" throat, 1"x1" capacity.
- 1-Heavy Beveling Shear, capacity  $\frac{3}{4}$ " plate.
- 1-350 ton Niles Hydraulic Wheel Press, 84" capacity.
- 1-100 ton Niles Hydraulic Wheel Press, 48" capacity.

### RADIAL DRILLS.

- 36" Dreeses g. b. drive.
- 1-6" Niles plain, motor drive.
- 1-34" Bickford, g. b. drive.
- 1-Heavy duty Baker drill, g. b. drive, Style 2 M.

### AUTO. TURRET LATHES.

- 1-3" P. & W., geared head.
- 2-2x24 J. & L., geared heads.
- 1-3x36 J. & L., geared heads.
- 1-2"x24 Pratt & Whitney, grd. hds.
- 1-2" Cleveland automatic, 5 hole.
- 1-14" W. & S. Turret.
- 8-Hand screw machines.

### MILLING MACHINES.

- 1-No. 14 Valley City universal.
- 1-No. 42 Oesterlein plain.
- 1-No. 4 Cincinnati plain.
- 1-No. 14 Oesterlein universal.
- 1-No. 3 Cin'ti plain, s. p. drive.
- 1-No. 4 Cincinnati vert., s. p. drive.
- 1-No. 1 Y Brown & Sharpe.
- 1-No. 10 Pratt & Whitney, hand.
- 2-No. 0 Owen plain, new.

### AIR COMPRESSORS.

- 1-13"x8"x12" Curtis vert. dbl. cyl.
- 1-No. 0 Auto garage compressor.
- 1-12"x10" Ingersoll-Rand.

### SHAPERS.

- 1-18" Hollingsworth, b. g. crank.
- 1-24" open side.

### ENGINE LATHES.

- 1-13"x5'6" Carroll-Jamison, s. q. c.
- 1-16"x8' South Bend.
- 1-17"x8' Greaves-Klusman.
- 1-20"x8' Lodge & Shipley, qck. ch.
- 12-17"x8' National, quick change.
- 6-18"x8' Milwaukee, semi qck. ch.
- 2-18"x10' Chard, semi qck. change.
- 1-28"x20' New Haven.
- 6-18"x8' Lodge & Shipley, grd. hds.

### GEAR CUTTERS AND HOBBS.

- 1-48" No. 4 Brown & Sharpe auto.
- 1-No. 6 Lees Bradner auto.
- 1-36" No. 4 Cincinnati auto.
- 1-24" Schuchardt & Schutte.
- No. 3 Brown & Sharpe, 36" capacity.

### GRINDERS.

- 1-No. 70 Heald, internal.
- 2-10"x30" Landis, plain.
- 1-6"x48" Pratt & Whitney, plain.
- 1-12"x32" Landis, plain.
- 1-12"x24" Modern grinder.
- 1-10"x24" Landis, plain.
- 1-6"x32" Norton, plain.
- 1-14" P. & W. vert. surface grinder.

### MULTIPLE DRILLS.

- 1-4-Spindle Barnes, 22", b. g. & p. f.
- 1-4-Spindle Barnes sensitive.
- 1-3-Spindle sen., Taylor & Fenn.
- 1-No. 4 32-spindle Fox.
- 6-24" Drills, single head.
- 1-40" Cincinnati, tapping attach.

### WRITE-WIRE-PHONE

**Broadway Machinery Company**  
236-238 Broadway      Cincinnati, Ohio

## Machinery for Immediate Delivery

- 1—Avey No. 3, type BB 4-spindle ball bearing Drill.
- 4—16x48 Landis Crank Shaft Grinders.
- 1—18x52 Landis Plain Grinder.
- 2—16x10 Blount Speed Lathes.
- 2—16x 8 Cincinnati Lathes.
- 1—16x 8 American Lathe.
- 1—16x12 Lodge & Shipley Lathe.
- 1—20x12 Rahn-Larmon Lathe.
- 1—20x10 Greaves-Klusman Heavy Duty Lathe.
- 1—24x10 Whitcomb-Blaisdell Lathe.
- 3—18x10 American Lathes.
- 3—16x18 Lodge & Shipley.
- 2—2" Jones & Lamson.
- 1—3" Jones & Lamson.
- 2—21" Gisholt Turret Lathes.
- 4—No. 4 Warner & Swasey Turret Lathes.
- 4—No. 6 Warner & Swasey Turret Lathes.
- 4—16" Acme Universal Turret Lathes.

Most all of the above machines are new, few having been used about 30 days,

- Standard Eng. Company Hand Miller with power feed.
- U. S. Whitney type Hand Miller.
- Becker No. 3 Vertical Miller with rotary table.
- No. 2 Wilmarth & Morman Surface Grinder.
- No. 2 Foster Screw Machine, automatic chuck.
- No. 3 Foster Screw Machine, automatic chuck.
- No. 4 National Screw Machine, geared friction head.
- 2—14x6 Walcott Double Back Geared Lathes.
- 2—16x6 Walcott Double Back Geared Lathes.
- 1—20x8 Walcott Double Back Geared Lathe.
- 1—20" Hoefer Back Geared, Power Feed Drill.
- 2—20" Excelsior Back Geared, Power Feed Drills.
- 3—20" Superior Drills.
- 2—24" Hoefer Sliding Head Back Geared Drills.
- 1—28" Hoefer Sliding Head Back Geared Drill.
- 1—Canedy-Otto 3½" Radial Drill.
- 1—Racine 6" Hack Saw Machine.
- 1—Peerless 6" Hack Saw Machine.
- 1—Myers 6" Hack Saw Machine.
- 1—No. 81-A Grant Riveting Machine.

All the above machinery at extremely attractive prices.

**The H. A. Smith Machinery Co., Inc.**  
 501-505 East Water St.,                      Syracuse, N. Y.



# Good Used Tools

We offer the following used machine tools. Further particulars gladly given on receipt of request. We have facilities for overhauling used machinery and aim to offer only trustworthy machines.

## BORING MACHINES.

No. 2 Rochester, table type, belt driven.  
2-spindle Moline adjustable center cylinder borer.

## DRILLING MACHINES.

1-spindle Henry & Wright ball bearing, sensitive, 24 swing.  
2-sp. Taylor & Fenn manufacturing.  
3-sp. Taylor & Fenn manufacturing.  
4-spindle 14" Foote-Burt.  
6-spindle Gardam.  
4-spindle 26" Barnes, sliding head gang drills, 3 jaw chucks, (2).  
14-spindle No. 6 Fox.  
25" Blaisdell sliding head drill.  
28" Snyder, sliding head.  
10" Barnes sensitive, (3).

## GRINDERS.

10x48 Pratt & Whitney plain.  
No. 2 Oakley univ. cutter and tool.  
Simmons cutter and tool, (2).  
No. 1 Norton cutter and tool, (2).  
No. 11 Landis plain.  
BX Yankee tool grinder.  
12x60 Landis universal.  
No. 11 Rivett, oscillating.  
No. 6 Bryant internal.  
48"x6" Springfield, surface.  
"H" Point Yankee twist drill.  
10x50 Norton plain, arranged for motor drive.  
No. 5 Rivett radial grinder.

## LATHES.

14"x6" Prentice Brothers, compound rest.  
16"x6" Porter, 5-step, pl. rest, p. c. f., special draw-in chuck.  
16"x7" Lehmann.  
16"x8" Cincinnati, d. b. g., quick change gears.  
16"x8" Lodge & Shipley, q. c., 5-step, taper att.  
18"x8" Perkins.  
18"x8" Reed.  
17"x8" Hamilton, 5-step, c. r., p. c. f., 14" h. s.  
20"x12" Fifeild.  
22"x6" Beaman & Smith.  
26"x12" Putnam, d. b. g., c. r., (2).  
30"x10" Gleason, plain rest, power cross feed.  
38"x20" New Haven.  
56"x24" Wood Light.

## MILLING MACHINES.

No. 14 Cincinnati plain, (4).  
No. 3 Fox plain, power feed.  
No. 14A Garvin plain, (7).  
No. 14 Garvin plain, (4).  
Rivett swivel miller.  
No. 3 Van Norman duplex.  
No. 12 Brown & Sharpe manufacturing miller.  
Grant manufacturing.  
No. 2 Pratt & Whitney, Lincoln miller.  
No. 2 Brown & Sharpe vertical, 20" circular att., power feed.  
No. 3 LeBlond plain, all power fds., geared feed box.

## SCREW MACHINES.

14" No. 54 National Acme auto.  
20x7 Fay & Scott, turret.  
24" Gisholt, turret.  
44" style "A" Cleveland auto., (2).  
2" Cleveland automatics, (6).  
4-sp. National Acme automatic, with stock stand.  
24" Davis turret chucking lathes, set-over turret, friction grd. head, p. f.  
No. 5A Potter & Johnston auto. chucking machine.  
No. 1 W. & S. hex. tur. lathes, fric. b. g. hd., auto. chuck and roller fd.  
Rivett, wire feed.  
Pratt & Whitney.  
National Acme automatic.  
Rivett, plain turret.

## GEAR CUTTERS.

26x10 & 36x10 Cincinnati. | No. 2 Whiton.

## MISCELLANEOUS.

Brake, 4' Ohl, double cam.  
Keyseater, No. 1 Davis.  
Pinion cutter, No. 1 Slate.  
Planer, 24"x24"x6" Flather, 1 head.

# Henry Prentiss & Company

Incorporated

149 Broadway

New York

# Bennett Bargains

## Planers

18-22-26-30-32-36-42-54-60" between housings; 1-2-3 and 4 heads.

## Vertical Boring Mills

30", 36", 51", 76" and 10'.

## Horizontal Boring Machines

21", 3", 4"; also 5" Barret type.

## Radial Drills

21", 3", 5' and 6'—Plain and Universal.

## Upright and Multiple Drills

12"-24"-36" and 42"; also 3 and 6 spindle.

## Lathes

Various sizes from 16" to 92" swing, 6' to 32' beds.

## Turrets

2x24", 20x6", also 20", 26" and 34".

## Milling Machines

48x36x14' Ingersoll 4 heads; 20"x7' Brainerd.

36" Shaper; 54" Slotter.

Also Punches and Shears, Gear Cutters, Grinders, Hammers, Presses, Cranes, Bolt and Pipe Machines

Advise us of all equipment you wish to purchase or sell

**G. L. Bennett Machinery Co., Inc.**

30 Church Street

New York City

# High Grade Bargains in Slightly Used Machines

1—Natco Multiple Drill, with 14-18" spindles.

2—No. 37 Natco Drills, 9/16-20 spindles.

1—30"x30"x18' Cincinnati Planer, with two heads.

1—30"x30"x16' Hamilton Planer, with two heads.

1—24"x24"x 6' Gray Planer, with one head.

1—No. 1 Warner & Swasey Screw Machine.

2—No. 2 Warner & Swasey Screw Machines.

1—No. 3-A Warner & Swasey Hollow Hexagon Turret Lathe, with chucking equipment.

5—No. 4 Warner & Swasey Screw Machines, geared friction head.

1—No. 6 Warner & Swasey Screw Machine.

1—30" Bullard Boring Mill.

1—3' Morris Radial Drill.

2—No. 2 Grand Rapids Milling Machines, plain.

1—24" Milwaukee Shaper.

4—9x18 Porter-Cable Lathes.

**M. J. Walsh Mchy. Co.,** 141 Sycamore St., Milwaukee, Wis.

# Back To Pre-War Prices!

## Planers

60" x 48" x 20' Gleason, 2 heads on cross rail, 1 side head.  
48" x 36" x 16' Detrick & Harvey Open Side, 2 heads on rail, 1 side head.  
48" x 36" x 10' Ohio, 2 heads on rail.  
42" x 42" x 12' Pond, 2 heads on cross rail.  
36" x 36" x 14' Cincinnati, 2 heads on cross rail.

## Boring Mills

14' Standard, 2 swivel heads, one extra milling head, 5" dia. spindle.  
10' Hillea & Jones, single swivel hd., table 80" dia. 9" thick, six T slots.  
90" Pond, 2 swivel heads.  
52" Bridgeport Bullard, 2 swivel heads.  
36" Baush, actual swing 38"; 2 swivel heads.

## Engine Lathes

52" x 22' Wood Light, triple geared, face plate drive.  
50" x 20' Pond, triple geared, face plate drive.  
38" x 14' Fay & Scott, 3" hollow spindle, comp. rest, power cross fd. etc.  
26" x 12' Putnam, heavy duty, double back geared.  
20" x 8' Lodge & Shipley, geared head, quick change gear compound rest, power cross feed, etc.  
5-Fay Automatic Lathes, 22" swing, 5½' bed.

## Punches and Shears

Thomas Carlin Alligator Shear, 12" blade, capacity 1½" round.  
Betts Punch, depth of gap 20".  
Newbold Rotary Splitting Shear, capacity ¾"; throat 28"; circular cutting attachment.  
325 Ton Watson & Stillman Hydraulic Straightening Pr., dia. of ram 14".

## Presses

No. 512 Bliss, 33 tons working pressure, 20½" bet. uprights, 6½" stroke.  
No. DD 4 Ferracute, roll feed, throat 9", stroke 3".  
No. 540 Max Ama, geared, 8" stroke, weight 5600 lbs.

## Slotters

30" Bullard.  
10" New Haven with circular table.  
10" New Haven.  
Ames Combination Slotter & Drill, slotting capacity 20".

## Milling Machines

No. 3 Hendey, Plain.  
No. 2 Hendey, Plain.  
No. 2½ Garvin Universal.

## Radial Drills

6' Baush, almost new.  
6' Bickford, semi-universal, tapping attachment.  
5½' Niles, semi-universal.  
5' Baush, motor driven.

**Every Make, Size and Description of  
Machine Tools for Immediate Delivery!**

*Send for De Luxe Edition of our Catalog*

## Graves Machinery Exchange

Warehouse and R. R. Siding:  
Johnson Ave. & Monitor St.,  
Jersey City, N. J.

Offices: Suite 482  
50 Church St., New York City  
Phone: Cortlandt 665

## FOR SALE BY

**The Toledo Screw Products Company, Toledo, Ohio**

Automatic screw machines at bargain prices.

Every machine in good running order.

Send for price list and description.

### AUTOMATIC SCREW MACHINES.

Jan.	1916	4871	No. 55	4788	National Acme.
"	1916	3644	No. 55	"	"
"	1916	3600	"	"	"
July	1916	One	2 in. No. 20014	Model A	Cleveland.
"	1916	"	2 in. No. 20016	"	A
"	1917	"	2 in. No. 23478	"	A
"	1917	"	2 in. No. 23478	"	A
Aug.	1917	"	2 in. No. 23536	"	A
Sept.	1916	"	2 in. No. 19794	Model B	Cleveland.
"	1916	"	2 in. No. 19796	"	B
Oct.	1916	"	2 in. No. 20634	"	B
"	1916	"	2 in. No. 20646	"	B
Jan.	1917	"	2 in. No. 19304	"	B
"	1917	"	2 in. No. 19154	"	B
June	1917	"	1 1/2 in. No. 23986	"	B
"	1917	"	1 1/2 in. No. 23988	"	B
"	1917	"	2 in. No. 23992	"	B
"	1917	"	2 in. No. 23996	"	B
"	1917	"	2 in. No. 23990	"	B
"	1917	"	2 in. No. 24000	"	B
"	1917	"	2 in. No. 23994	"	B
"	1917	"	2 in. No. 22998	"	B
July	1917	"	2 in. No. 24008	"	B
Aug.	1917	"	2 in. No. 24006	"	B
Jan.	1918	"	2 in. No. 26694	"	B
"	1918	"	2 in. No. 26698	"	B
"	1918	"	2 in. No. 26696	"	B
"	1918	"	2 in. No. 26692	"	B
"	1918	"	2 in. No. 26688	"	B
"	1918	"	2 in. No. 26690	"	B
Feb.	1918	"	2 in. No. 26744	"	B
"	1918	"	2 in. No. 26740	"	B
"	1918	"	2 in. No. 25748	"	B
"	1918	"	2 in. No. 26746	"	B
"	1918	"	2 in. No. 26742	"	B
Mar.	1918	"	2 1/2 in. No. 25750	"	B
July	1918	"	2 in. No. 27786	"	B
"	1918	"	2 in. No. 27780	"	B
"	1918	"	2 in. No. 27808	"	B
"	1918	"	2 in. No. 27782	"	B
"	1918	"	2 in. No. 27784	"	B
"	1918	"	2 in. No. 27788	"	B
"	1918	"	1 1/2 in. No. 27776	"	B
"	1918	"	1 1/2 in. No. 27778	"	B
"	1918	"	2 in. No. 26778	"	B
"	1918	"	2 in. No. 26804	"	B
"	1918	"	2 in. No. 27790	"	B
"	1918	"	2 in. No. 27796	"	B
Nov.	1918	"	1 1/2 in. No. 28842	"	B
"	1918	"	1 1/2 in. No. 28840	"	B
"	1918	"	1 1/2 in. No. 28836	"	B
"	1918	"	1 1/2 in. No. 28838	"	B

### MISCELLANEOUS.

Annealing oven, gas No. 6 Bellevue.

Hack saw No. 1, power.

Lever cut-off for No. 2 shaving machine.

Nut tapper, 1 1/2 6-spindle Acme.

Oil extractor, No. 400 Curtis.

Tapper, No. 2 Garvin, back geared

Threader, Geometric (1915).

Threader, Webster & Perks (1918).

Threader, National Acme, belt.

# Exceptional Machinery Bargains

## Ship Builders—Look!

### Furnace Outfit

- 1—Tate & Jones Single End Angle Heating Furnace, cast iron construction, chamber 2'0" wide, 15'3" long, equipped with four No. 50 oil burners with funnels and yokes.
- 1—Pumping System for above.
- 1—3000 gal. Tank for above
- 1—Bending Floor, 10'x20'
- 1—Standard No. 450 Furnace
- 1—Hoover Ever-ready No. 2-A Tempering furnace.

### Grinders

- 1—No. 2-A Landis 16x32 Universal Grinder.
- 2—Gardner double disc Grinders No. 120 plain.

### Millers

- 1—No. 3 LeBlond Plain, d. b. g., 3-step cone, heavy duty.
- 1—No. 3 Cincinnati, d. b. g., 3-step cone type.
- 2—No. 1½ American Plain Millers, (new).
- 2—No. 2 Rockford Universal Millers, (new).
- 2—No. 0 Bickett Vertical Profilers and Millers, (new)

### Lathes and Turrets

- 2—24" Gisholt Lathes, chucking equipment and taper att., (modern machine).
- 1—12" Warner & Swasey 1½" h. s., without wire feed.
- 1—14" Drees 1" hole in spindle without wire feed
- 1—12" Dawson & Goodwin 1 3-16" h. s. with wire feed auto chuck etc
- 2—14"x6" Flathers Engine Lathes, h. s., c r independent change gears, one with taper attachment.
- 1—24"x14" Thayer & Houghton (old style) but good
- 1—Each new Sidney Heavy Duty 27", 25", 19", 17" and 15" swing, by 6' 8", 10' and 14' beds, all 3-step cone, d. b. g., q. c.

### Drills—Radials and Multiples.

- 1—4' Full Universal Radial Drill drills to center of 104" circle.
- 1—No. 30 Natco 34-spindle Multiple Drill, with No. 2 Morse taper shanks, motor drive.
- 2—21" Hoefler Stationary Head Drills
- 2—24-28" Hoefler, s. h., b. g., p f drills.

### Presses

- 1—No. 3-C Bliss Straight Side Double Crank.
- 2—New Rockford Incluable Presses, Nos 2 and 3
- 2—No. 3½ Toledo Incluable Presses.

### Punches and Shears

- 1—No. 2 Royersford Double End 7½" throat, punch ¾x½", shear 6x½" flat.
- 1—No. 1 Quickwork Rotary Shear No. 14 gauge, capacity 60" throat.

**Send for our 48-page List No. 200, just off press  
Includes over 1,000 Machines on our own floors**

*Send us your inquiries.*

**Wayne Machinery Company**

**Fort Wayne, Indiana**

**Branch Office and Warehouse: 18 West 2nd St., Dayton, Ohio**

**New Boston Show Rooms**  
**W. H. J. Fitzgerald & Co.**  
**30 Oliver St., Boston**

- 1 Foote-Burt Company No. 23 Heavy Duty Drill, 20" swing, single belt drive, capacity  $\frac{3}{8}$ " to  $1\frac{1}{4}$ ", guaranteed good as new.
- 2 No. 2 Warner & Swasey Turret Screw Machines, plain head, automatic chuck, bar feed, hand longitudinal feed to cut-off, with power feed to hexagon turret.
- 2 No. 1 Warner & Swasey Turret Screw Machines, plain head, automatic chuck, bar feed, lever feed to cut-off only, automatic chuck capacity  $\frac{3}{8}$ ".

These machines are in A-1 condition.

**Six  $\frac{1}{4}$  Inch Automatic Screw Machines**  
**(Stehli Patent)**

Each fitted with screw slotting attachment. Manufactured by Hartford Machine Screw Company. These machines adapted to the rapid production of all kinds of small screws, bushings, studs, etc. Condition, good as new.

**WHEN YOU INQUIRE**

of advertisers herein, won't you kindly remember to say somewhere in your communication that the inquiry comes from Hitchcock's Machine Tool List? Advertisers are human; they like to know that the medium in which they spend their money is received and consulted by machinery users. Not being mind readers, they can only know this when you tell them, and if you neglect to tell them, the Tool List is deprived of credit for the service it has rendered.

## Contract Work Wanted

This department is exclusively for the use of those desiring to secure contracts for anything in the line of foundry or machine work, including press work, dies, jigs, fixtures, gears, die castings, drop forgings, screw machine products, springs, bolts, nuts, rivets, etc. Advertisements are to be set with side headings as shown, and with such display as may be appropriate to the copy used. Rates: one-eighth page, per month, \$4.

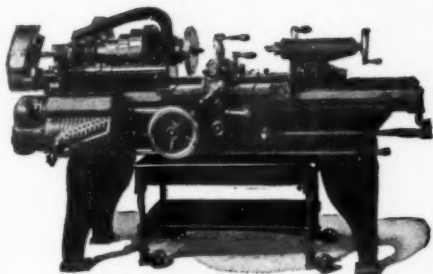
<p><b>Screw Machine Products</b></p>	<p><b>The New Britain Machine Co.</b> New Britain, Conn. Long experience, a complete organization, and the most efficient machinery put a real meaning in the slogan—<i>"Quality, Service, Economy."</i> Large work a specialty. Let us figure on your requirements.</p>
<p><b>Dies Tools Special Machinery</b></p>	<p><b>Robbins, Gamwell &amp; Co.</b> Pittsfield, Mass. Accuracy and efficiency in gages, dies and special machinery, is our specialty.</p>
<p><b>Gray and Malleable Iron Castings Die Castings</b></p>	<p><b>Lough Brothers</b> 90 West Street, New York City Gray iron castings, one ounce to twenty tons. Malleable iron castings. Die castings in aluminum, tin and zinc alloys.</p>
<p><b>Dies Gauges Fixtures Special Machines</b></p>	<p><b>The Steber Machine Co.</b> Established 1891      Utica, N. Y.      Incorporated 1906 We have made a specialty of accurate work for the past 27 years.</p>
<p><b>Drop Forgings (All Kinds)</b></p>	<p><b>Bonney Vise &amp; Tool Works, Inc.</b> Allentown, Pa. Quick and Accurate Drop Forging and Finishing Good tools, good men, and good management insure precision and promptness. Investigate; when you know our facilities and our record you'll want our service.</p>
<p><b>Contracting Machinists</b></p>	<p><b>Mauch Chunk Iron Works</b> Mauch Chunk, Penna. Contracting Machinists—Accurate work on a quantity production basis is our specialty.</p>
<p><b>Pressed and Stamped Steel Parts</b></p>	<p><b>Geuder, Paeschke &amp; Frey Co.</b> 1325-1700 St. Paul Av., Milwaukee, Wis. It will pay you to let us figure on such pressed, stamped or drawn metal articles or parts as you may require, be they made of steel, aluminum, brass or copper. Our 15-acre plant at your disposal. Get the benefit of our "Knowing how since '81." Send samples or blue prints for est.</p>

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# The "New Britain" Portable Lathe Pan



It catches everything that drops between the shears. A cock is provided for drawing off and saving the oil.

Built of cast iron and correctly proportioned, it is practically unbreakable and easily carries loads of 500 pounds. The handsome design matches the lines of the lathe, and an occasional coat of paint keeps it like new.

Ball bearing casters, that face instantly in any direction, make it easy to move about, which is always desirable, but especially so in cramped quarters.

It is made in a wide range of sizes, and meets the needs of high-production modern lathes in capacity, strength and ease of handling, in a way that makes it of far greater value than its moderate cost.

*Write for Bulletin No. 1218*

**The New Britain Machine Company**

**"Shop Furniture  
Originators"**



**New Britain,  
Conn. U.S.A.**

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# Modern Internal Grinder

## Full Self-Contained



A wonderfully efficient grinder of the highest class, and with our special fixtures adapted to wide range of internal work.

Has both the weight and structural features to give maximum rigidity and easy operation.

Head Stock Spindle has extra long tapered bronze bearings with adjustment to compensate for wear. Table drive and reversing mechanism absolutely non-selfcentering.

The Modern is a machine of notably small upkeep.

Send for complete technical bulletin. Send blue prints and samples and allow us to quote on the fixture installation especially adapted to your job.

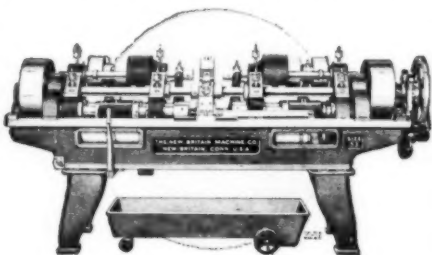
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**Modern Tool Company**  
2nd and Peach Sts., **ERIE, PA.**

# "N-B" Automatic Multiple Spindle Chucking Machine

Increases Production 300 to 500 Per cent

Over the Turret Lathe or Hand Screw Machine, in the finishing of Castings or Forgings involving a series of end operations and on Second-Operation Screw Machine Work.



The Double-Head Automatic, illustrated above, performs three simultaneous operations at each end of the work.

The Single-Head Automatic is furnished to perform up to either four or five simultaneous operations on one end only.

All operations are performed *automatically, simultaneously and continuously, in the time of the longest single operation or subdivision thereof*, without stopping the machining process even for loading and unloading.

*Better write for complete data, and send samples or blue prints for production estimate*

**The New Britain Machine Company**

**Automatic  
Screw and Chucking  
Machines**



**New Britain,  
Connecticut,  
U.S.A.**

